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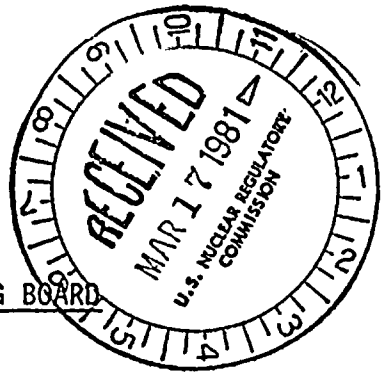

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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

NRC RESPONSE TO JOINT INTERVENORS' INTERROGATORIES

Interrogatory 1

Explain the present Staff position on Joint Intervenors contention 4.

Response

A. The Diablo Canyon onsite plan is in substantial compliance with the revised 10 C.F.R. 50; the State and county plans are currently being upgraded. The combined plans must comply with the revised emergency planning regulations prior to issuance of a full power license.

B. Onsite and Offsite Emergency Plans. Safety Evaluation Report related to the operation of Diablo Canyon Nuclear Power Station Units 1 and 2, Supplement Nos. 10 and 12.

C. There were no documents or studies examined but not relied upon by the Staff which pertain to the subject matter questioned.

D. The Staff and/or independent contractor are not presently engaged in or intend to engage in further research or work which may bear

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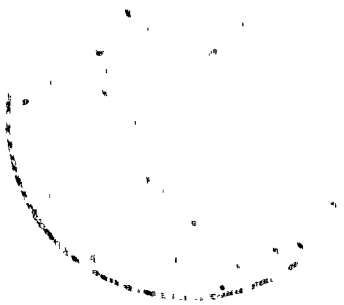

on the issues covered in the interrogatory other than the normal staff review.

E. (1) John R. Sears is the expert whom the Staff intends to have testify on the subject matter covered in the interrogatory. A copy of his professional qualifications is in attachment A.

(2) The Staff objects to this interrogatory as inquiring into privileged matter. Any summary of the witness testimony would be privileged as trial preparatory material. See Kansas Gas and Electric Co. (Wolf Creek Nuclear Generating Station, Unit 1), ALAB-327, 3 NRC 408 (1976). Further, since at present no such summaries exist, requiring the Staff to compile data and create such a summary is objectionable. See 42A Moore's Federal Practice, ¶33.20(3). Therefore, throughout this document Part (2) of Subpart E will not be answered. The Staff further notes that Joint Intervenors will have a complete copy of all Staff testimony prior to any hearing.

(3) John R. Sears has testified:

(a) on emergency planning and security in Pacific Gas and Electric Company (Diablo Canyon Nuclear Power Plant, Units 1 and 2), Docket Nos. 50-275, 50-323;

(b) on emergency planning and security in Southern California Edison Company (San Onofre, Units 2 and 3), Docket Nos. 50-361, 50-3600L;

(c) on emergency planning in a proceeding culminating in Commonwealth Edison Company (Zion Station, Units 1 and 2), LBP-80-7, 11 NRC 245 (1980);

(d) on emergency planning in Boston Edison Company (Pilgrim Nuclear Generating Station, Unit 2), Docket No. 50-471;

(e) on emergency planning in Long Island Lighting Company (Jamesport Nuclear Power Station, Units 1 and 2), Docket Nos. 50-516, 50-517; and

(f) on implementation of plant operations in Yankee Atomic Electric Company (Yankee Nuclear Power Station), Docket No. 50-029.

Interrogatory 2

Does the current position differ from the position of the Staff in any prior proceedings? If so, identify the proceeding(s), explain the prior position, and explain the basis for the change in position.

Response

A. There is no difference. The Staff maintains that these plans are all adequate for low power testing and fuel load.

B. Onsite and Offsite Emergency Plans. Safety Evaluation Report related to the operation of Diablo Canyon Nuclear Power Station Units 1 and 2, Supplement Nos. 10 and 12.

C. None.

D. The Staff and/or independent contractor are not presently engaged in or intend to engage in further research or work which may bear on the issues covered in the interrogatory other than normal Staff review.

E. (1) John R. Sears is the expert whom the Staff intends to have testify on the subject matter covered in the interrogatory. A copy of his professional qualifications is in attachment A.

(2) See response to Interrogatory 1.E(2).

(3) See answer to Interrogatory 1.E(3).

Interrogatory 3

Identify any members of the Staff who dissent from the present Staff position on Joint Intervenors contention 4. Explain the reasons for which any Staff member dissents.

Response

A. There are no identified dissenting staff members.

B. None.

C. None.

D. The Staff and/or independent contractor are not presently engaged in or intend to engage in further research or work which may bear on the issues covered in the interrogatory other than the normal staff review.

E. (1) John R. Sears is the expert whom the Staff intends to have testify on the subject matter covered in the interrogatory. A copy of his professional qualifications is in attachment A.

(2) See response to Interrogatory 1.E(2).

(3) See answer to Interrogatory 1.E(3).

Interrogatory 4

Identify the specific sections and page numbers of the FSAR for Diablo Canyon and the NRC Staff's SER and SER Supplements for Diablo Canyon, which are relied upon in formulating the Staff position on Joint Intervenors contention 4.

Response

A. The Staff reviewed the entire onsite and offsite plans to formulate the present position. Sections III.A.1.1.1, III.A.1.2, III.A.1 2(a), III.A.1.2(b), III.A.3, III.A.3.3, III.B and III.B.1 on pages III A-1 through page III.B-3 of SER Supplement No. 10 and sections III.A.1 1, III.A.1.2, III.A.1.2(b) and III.A.2 on pages III-1 through page III-3 of SER Supplement No. 12 were relied upon in formulating the Staff position on Joint Intervenors contention 4.

B. Onsite and Offsite Emergency Plans. Safety Evaluation Report related to the operation of Diablo Canyon Nuclear Power Station Units 1 and 2, Supplement Nos. 10 and 12

C. There were no documents or studies examined but not relied upon by the Staff which pertain to the subject matter questioned.

D. The Staff and/or independent contractor are not presently engaged in or intend to engage in further research or work which may bear on the issues covered in the interrogatory other than the normal staff review.

E. (1) John R. Sears is the expert whom the Staff intends to have testify on the subject matter covered in the interrogatory A copy of his professional qualifications is in attachment A.

(2) See response to Interrogatory 1.E(2).

(3) See answer to Interrogatory 1.E(3).

Interrogatory 5

Identify all sections and page numbers of the FSAR, SER, and SER Supplements which contain subject matter pertaining to Joint Intervenors contention 4.

Response

The Staff notes that this interrogatory is objectionable in that it asks the Staff to compile data which is as readily available to Joint Intervenors as to Staff. The Joint Intervenors can read the FSAR, SER and SER Supplements and find for themselves any portions relevant to their contention. See 4A Moore's Federal Practice, Para 33.20(3). Nevertheless, in the interest of expediting the proceeding, the Staff will answer the interrogatory.

A.- E. See answer to interrogatory 4.

Interrogary 6

Does the Staff contend that the Applicant, state, and local emergency response plans for Diablo Canyon as they are presently constituted comply with the Commission's revised emergency planning regulations,

effective November 3, 1980 ("Final Regulations on Emergency Planning," 45 Fed. Reg. 55402 (August 19, 1980))?

Response

A. No. The Diablo Canyon onsite plan is in substantial compliance with the revised 10 C.F.R. 50; the State and county plans are currently being upgraded. The combined plans must comply with the revised emergency planning regulations prior to issuance of a full power license.

B. Onsite and Offsite Emergency Plans. Safety Evaluation Report related to the operation of Diablo Canyon Nuclear Power Station Units 1 and 2, Supplement Nos. 10 and 12.

C. There were no documents or studies examined but not relied upon by the Staff which pertain to the subject matter questioned.

D. The Staff and/or independent contractor are not presently engaged in or intend to engage in further research or work which may bear on the issues covered in the interrogatory other than the normal Staff review.

E. (1) John R. Sears is the expert whom the Staff intends to have testify on the subject matter covered in the interrogatory. A copy of his professional qualifications is in attachment A.

(2) See response to Interrogatory 1.E(2).

(3) See answer to Interrogatory 1.E(3).

Interrogatory 7

If the answer to interrogatry 6 is yes, specifiy each and every fact supporting that answer.

Response

A.- E. Not Applicable.

Interrogatory 8

If the answer to interrogatory 6 is no, does the Staff contend that the Commission's revised emergency planning regulations need not be complied with prior to issuance of licenses to load fuel and conduct low power tests at Diablo Canyon? Specify each and every fact supporting the answer to this Interrogatory.

Response

A. The Staff originally stated, in NUREG-0694, that for a low power license, an applicant need only substantially meet requirements in 10 C.F.R. 50 and Appendix E (as amended at 38 Fed. Reg. 1272, January 11, 1973), and conform to the guidance in Regulatory Guide 1.101. The Staff published an evaluation of the applicant, State and local emergency plans in August 1980 (Safety Evaluation Report (SER), Supplement No. 10, Docket Nos. 50-275 and 50-323). These plans were found acceptable for low-power operation according to the standards in NUREG-0694.

Since that time, NUREG-0694 has been clarified by NUREG-0737 which references a revised 10 C.F.R. 50 and NUREG-0654 with respect to low power operation. This reference is found in a table in Enclosure 2 of NUREG-0737 although the textual words in NUREG-0694 were not modified. The above finding is, however, consistent with paragraph 50.47(c)(1) of 10 C.F.R. 50 (August 19, 1980) which states that the Commission may issue a license to operate a plant if the applicant can demonstrate that

deficiencies in the plans are not significant for the plant in question or that adequate interim compensating actions have been or will be taken promptly. The offsite plans (State and county) do not currently meet NUREG-0654, Rev. 1 requirements, but they are being upgraded and will be completed later this year. In addition, under 10 C.F.R. 50.57(c) for purposes of low power testing, it must be found that the applicant has met the requirements of the regulations which are relevant to the low power testing authorization. The finding in SER Supplement No. 10, Docket Nos. 50-275 and 50-323, supports the conclusion that any areas of non-compliance with the revised emergency planning regulations are not relevant to the public health and safety during low power testing.

Further, the Federal Emergency Mangement Agency (FEMA) has specifically made the finding that the present emergency plans at Diablo Canyon adequately protect the public health and safety for the purposes of Low Power Testing. (FEMA/NRC Interim Agreement on Criteria for Low Power Testing at New Commercial Nuclear Facilities--Supp. 10; Memorandum for Harold R. Denton and John W. McConnell from FEMA/NRC Steering Committee, see attachment B.) Meanwhile, all of the previously approved offsite plans are still in effect. The onsite plan has been upgraded and is in substantial compliance with NUREG-0654, Rev. 1 requirements. (A detailed Staff analysis of the upgraded onsite plan will be published in Supplement No. 13 to the SER. After Supplement No. 13 is published, NRC will send a copy to Joint Intervenors).

If, during low-power operation, an accident were to occur that would release a fraction of the small fission product inventory that would have accumulated during testing, offsite doses would be insignificant and no

offsite protective actions would be anticipated (See Page 3 of Diablo Canyon Safety Evaluation Report, Supplement No. 10 for discussion of risks.) The current onsite and offsite plans are sufficient for such an unlikely event. The Staff technical position thus remains that adequate emergency preparedness is in place for fuel load and low-power operation.

B. Onsite and Offsite Emergency Plans. Safety Evaluation Report related to the operation of Diablo Canyon Nuclear Power Station Units 1 and 2, Supplement Nos. 10 and 12.

Memorandum for Harold R. Denton and John W. McConnell from FEMA/NRC Steering Committee (See attachment B).

C. There were no documents or studies examined but not relied upon by the Staff which pertain to the subject matter questioned.

D. The Staff and/or independent contractor are not presently engaged in or intend to engage in further research or work which may bear on the issues covered in the interrogatory other than the normal staff review.

E. (1) John R. Sears is the expert whom the Staff intends to have testify on the subject matter covered in the interrogatory. A copy of his professional qualifications is in attachment A.

(2) See response to Interrogatory 1.E(2).

(3) See answer to Interrogatory 1.E(3).

Interrogatory 9

If the answer to interrogatory 6 is no, using a section by section analysis explain how and in what sections the Applicant, state and local

emergency plans do not comply with the Commission's revised emergency planning regulations.

Response

A. - E. See answer to interrogatory 8.

Interrogatory 10

Specify any and all revisions or changes which the Staff contends must be made in the applicable emergency plans referred to in Joint Intervenors contention 4, and any and all actions which must be taken, to eliminate prior to fuel loading at Diablo Canyon any deficiencies in those plans as they relate to the Commission's revised emergency planning regulations.

Response

A. As we stated in answers to interrogatories 1, 2 and 4, all emergency plans at Diablo Canyon meet our criteria for fuel load and low power testing.

B. Onsite and Offsite Emergency Plans. Safety Evaluation Report related to the operation of Diablo Canyon Nuclear Power Station Units 1 and 2, Supplement Nos. 10 and 12.

C. There were no documents or studies examined but not relied upon by the Staff which pertain to the subject matter questioned.

D. The Staff and/or independent contractor are not presently engaged in or intend to engage in further research or work which may bear

on the issues covered in the interrogatory other than the normal staff review.

E. (1) John R. Sears is the expert whom the Staff intends to have testify on the subject matter covered in the interrogatory. A copy of his professional qualifications is in attachment A.

(2) See response to Interrogatory 1.E(2).

(3) See answer to Interrogatory 1.E(3).

Interrogatory 11

Specify what, if any, deficiencies in the Applicant, state, and local emergency plans as they relate to the Commission's revised emergency planning regulations which the Staff contends need not be eliminated prior to fuel loading at Diablo Canyon.

Response

A.- E. See answer to interrogatory 10.

Interrogatory 12

With respect to any of the deficiencies specified in answer to interrgatory 11, explain why they are not significant for Diablo Canyon and what interim actions have been or must be taken to compensate for the deficiencies.

Response

A.- E. Not Applicable.

Interrogatory 13

Explain how the public will be informed in advance about the appropriate protective actions which should be taken in the event of an emergency.

Response

A. A pre-accident public information program will be implemented. This program aims to provide the resident and transient populations within the 10-mile EPZ with information on topics such as emergency classes and protective measures. The applicant's public information program will consist of general information on warning procedures and protective actions. This information will be provided to the public in various forms such as pamphlets, advertisements, or bill inserts such that all topic areas will be covered annually. In addition, the applicant will, in cooperation with State and local agencies, provide such information in periodic public meetings and via radio and television announcements.

B. Onsite and Offsite Emergency Plans. A detailed Staff analysis will be published in Supplement No. 13 to the SER. After Supplement No. 13 is published, NRC will send a copy to Joint Intervenors.

C. There were no documents or studies examined but not relied upon by the Staff which pertain to the subject matter questioned.

D. The Staff and/or independent contractor are not presently engaged in or intend to engage in further research or work which may bear on the issues covered in the interrogatory other than the normal staff review.

E. (1) John R. Sears is the expert whom the Staff intends to have testify on the subject matter covered in the interrogatory. A copy of his professional qualifications is in attachment A.

(2) See response to Interrogatory 1.E(2).

(3) See answer to Interrogatory 1.E(3).

Interrogatory 14

By what method will the public be notified of recommended protective actions during an emergency and how long will it take to notify all persons within 10 miles of the reactor?

Response

A. Applicant is installing a prompt alerting and notification system in accordance with Appendix 3 of NUREG-0654, within a 10-mile minimum radius of the plant. The system consists of about 52 electro-mechanical sirens and is capable of notifying 100% of the population within 6 miles, and 90% of the population within 10 miles of the plant, within 15 minutes after notification to the County Sheriff. Actuation of the system is the decision of the County Office of Emergency Services (OES). In the pre-accident public information program, the populace will be instructed that the sirens are simply alerting devices and that people should turn on radios to predesignated stations for further instructions. Installation of the system will be completed by July 1, 1981, in accordance with 10 C.F.R. 50, Appendix E.

B. Onsite and Offsite Emergency Plans. A detailed Staff analysis will be published in Supplement No. 13 to the SER. After Supplement No. 13 is published, NRC will send a copy to Joint Intervenors.

C. There were no documents or studies examined but not relied upon by the Staff which pertain to the subject matter questioned.

D. The Staff and/or independent contractor are not presently engaged in or intend to engage in further research or work which may bear on the issues covered in the interrogatory other than normal Staff review.

E. (1) John R. Sears is the expert whom the Staff intends to have testify on the subject matter covered in the interrogatory. A copy of his professional qualifications is in attachment A.

(2) See response to Interrogatory 1.E(2).

(3) See answer to Interrogatory 1.E(3).

Interrogatory 15

Explain how the emergency response plan for Diablo Canyon takes into consideration the likehood of "spontaneous" evacuation outside the 10 mile EPZ which may interfere with evacuation efforts within the EPZ.

Response

A. The offsite plans have not been completed. Because of the low risk involved of a small fraction of the fission product going beyond the boundaries of the plant evacuation plans are extremely unlikely to be executed during low power. Because of this low risk, "spontaneous" evacuation is not of concern during low power testing. FEMA has already

stated that the present status of offsite planning is adequate for low power testing. Therefore, "spontaneous" evacuation need not be considered for low power testing.

B. Onsite and Offsite Emergency Plans. Safety Evaluation Report related to the operation of Diablo Canyon Nuclear Power Station Units 1 and 2, Supplement No. 10

Memorandum for Harold R. Denton and John W. McConnell from FEMA/NRC Steering Committee (See attachment B).

C. There were no documents or studies examined but not relied upon by the Staff which pertain to the subject matter questioned.

D. The Staff and/or independent contractor are not presently engaged in or intend to engage in further research or work which may bear on the issues covered in the interrogatory other than the normal staff review.

E. (1) John R. Sears is the expert whom the Staff intends to have testify on the subject matter covered in the interrogatory. A copy of his professional qualifications is in attachment A.

(2) See response to Interrogatory 1.E(2).

(3) See answer to Interrogatory 1.E(3).

Interrogatory 16

Explain how spontaneous evacuation by the public will be discouraged.

Response

A. As explained in the response to Interrogatory 15, "spontaneous" evacuation is not a concern for low power testing. Therefore, spontaneous evacuation by the public will not have to be discouraged for low power testing.

B. Onsite and Offsite Emergency Plans. Safety Evaluation Report related to the operation of Diablo Canyon Nuclear Power Station Units 1 and 2, Supplement No. 10

Memorandum for Harold R. Denton and John W. McConnell from FEMA/NRC Steering Committee (See attachment B).

C. There were no documents or studies examined but not relied upon by the Staff which pertain to the subject matter questioned.

D. The Staff and/or independent contractor are not presently engaged in or intend to engage in further research or work which may bear on the issues covered in the interrogatory other than the normal staff review.

E. (1) John R. Sears is the expert whom the Staff intends to have testify on the subject matter covered in the interrogatory. A copy of his professional qualifications is in attachment A.

(2) See response to Interrogatory 1.E(2).

(3) See answer to Interrogatory 1.E(3).

Interrogatory 17

To what distance would the entire 360 degree circumference of the reactor be evacuated, regardless of wind direction during a major atmospheric release?

Response

A. The offsite plans have not been completed. No significant offsite plans are required for evacuation of a partial distance or the entire 360 degree circumference of the reactor because of the low risks during low power testing. A major atmospheric release would not occur at low power testing because, if an accident happened the release would only be a small fraction of the fission product inventory. FEMA has already stated the present status of offsite planning is adequate for low power testing. Therefore, the evacuation of a partial distance or the entire 360 degree circumference of the reactor need not be considered for low power testing.

B. Onsite and Offsite Emergency Plans. Safety Evaluation Report related to the operation of Diablo Canyon Nuclear Power Station Units 1 and 2, Supplement No. 10.

Memorandum for Harold R. Denton and John W. McConnell from FEMA/NRC Steering Committee (See attachment B).

C. There were no documents or studies examined but not relied upon by the Staff which pertain to the subject matter questioned.

D. The Staff and/or independent contractor are not presently engaged in or intend to engage in further research or work which may bear on the issues covered in the interrogatory other than the normal staff review.

E. (1) John R. Sears is the expert whom the Staff intends to have testify on the subject matter covered in the interrogatory. A copy of his professional qualifications is in attachment A.

(2) See response to Interrogatory 1.E(2).

(3) See answer to Interrogatory 1.E(3).

Interrogatory 18

Explain how the angle size and length of evacuation sectors will be determined.

Response

A. - E. See answer to Interrogatory 17.

Interrogatory 19

What is the spectrum of radioactive plume speeds factored into the emergency response plan?

Response

A. The spectrum covers all wind speeds at the site from zero to the highest speed of wind in a specific direction. The emergency response plan is designed to be applicable and adequate for all wind speeds.

B. Onsite and Offsite Emergency Plans. PG&E Diablo Canyon Power Plant Emergency Plan, Section 6.

C. There were no documents or studies examined but not relied upon by the Staff which pertain to the subject matter questioned.

D. The Staff and/or independent contractor are not presently engaged in or intend to engage in further research or work which may bear on the issues covered in the interrogatory other than normal staff review.

E. (1) John R. Sears is the expert whom the Staff intends to have testify on the subject matter covered in the interrogatory. A copy of his professional qualifications is in attachment A.

(2) See response to Interrogatory 1.E(2).

(3) See answer to Interrogatory 1 E(3).

Interrogatory 20

Explain how the decision will be made whether to order sheltering or evacuation during an atmospheric release of radioactivity. What factors will be considered in making the decision? What criteria will be applied to decide when to evacuate as opposed to when to shelter?

Response

A. A designated county official will have the authority to order evacuations. His decision will be made based upon assessments made by all offsite emergency workers, and upon recommendation make by the Diablo Canyon Emergency Coordinator. The latter will make his recommendation according to criteria in table 2.1 and 2.2 of the manual of Protective Action Guides and Protective Actions for Nuclear Incidents (EPA-520/1-75-001), and according to offsite radiological measurement and dose projection.

B. Onsite and Offsite Emergency Plans. NUREG-0654, Rev. 1, page 60.

C. There were no documents or studies examined but not relied upon by the Staff which pertain to the subject matter questioned.

D. The Staff and/or independent contractor are not presently engaged in or intend to engage in further research or work which may bear on the issues covered in the interrogatory other than the normal staff review.

E. (1) John R. Sears is the expert whom the Staff intends to have testify on the subject matter covered in the interrogatory. A copy of his professional qualifications is in attachment A.

(2) See response to Interrogatory 1.E(2).

(3) See answer to Interrogatory 1.E(3).

Interrogatory 21

Who will order the appropriate protective action for the public and on the basis of what information and criteria?

Response

A. - E. See answer to interrogatory 20.

Interrogatory 22

In endorsing the concept of EPZ planning guidance, the Commission stated "it is appropriate and prudent for emergency planning guidance to take into consideration the principal characteristics . . . of a spectrum of design basis and core melt accidents." 44 Fed. Reg. 61123 (October 23, 1979). Explain how the Diablo Canyon emergency response plan considers the principal characteristics of a spectrum of core melt accidents.

Response

A. All applicants are required to consider a wide spectrum of accidents, including core-melt, in their emergency plans. Four classes of Emergency Action Levels are established each with associated examples of initiating conditions. The classes are: (a) notification of unusual event, (b) alert, (c) site area emergency, and (d) general emergency.

The rationale for the notification and alert classes is to provide early and prompt notification of minor events which could lead to more serious consequences given operator error or equipment failure or which might be indicative of more serious conditions which are not yet fully realized. A gradation is provided to assure fuller response preparations for more serious indicators. The site area emergency class reflects conditions where some significant releases are likely or are occurring but where a core melt situation is not indicated based on current information. In this situation, full mobilization of emergency personnel in the near site environs is indicated as well as dispatch of monitoring teams and associated communications. The general emergency class involves actual or imminent substantial core degradation or melting with the potential for loss of containment. The immediate action for this class is sheltering (staying inside) rather than evacuation until an assessment can be made that (1) an evacuation is indicated and (2) an evacuation, if indicated, can be completed prior to significant release and transport of radioactive material to the affected areas.

The example initiating conditions listed after the immediate actions for each class are to form the basis for establishment by each licensee

of the specific plant instrumentation readings (as applicable) which, if exceeded, will initiate the emergency class.

B. Onsite and Offsite Emergency Plans. Appendix 1, NUREG-0654, Rev. 1.

C. There were no documents or studies examined but not relied upon by the Staff which pertain to the subject matter questioned.

D. The Staff and/or independent contractor are not presently engaged in or intend to engage in further research or work which may bear on the issues covered in the interrogatory other than the normal Staff review.

E. (1) John R. Sears is the expert whom the Staff intends to have testify on the subject matter covered in the interrogatory. A copy of his professional qualifications is in attachment A.

(2) See response to Interrogatory 1.E(2).

(3) See answer to Interrogatory 1.E(3).

Interrogatory 23

Explain the present Staff position on Joint Intervenors contention 5.

Response

A. Item III.A.1.1 - The applicant has made these improvements. Our evaluation of these improvements are documented in NUREG-0675, Safety Evaluation Report for Diablo Canyon, Supplement Nos. 10 and 12.

Item III.A.1.2 - Improvements and commitments have been made by PG&E, and are acceptable (NUREG-0675, Supplement Nos. 10 and 12).

B. Onsite and Offsite Emergency Plans. Safety Evaluation Report for Diablo Canyon, Supplement Nos. 10 and 12.

C. There were no documents or studies examined but not relied upon by the Staff which pertain to the subject matter questioned.

D. The Staff and/or independent contractor are not presently engaged in or intend to engage in further research or work which may bear on the issues covered in the interrogatory other than the normal staff review.

E. (1) John R. Sears is the expert whom the Staff intends to have testify on the subject matter covered in the interrogatory. A copy of his professional qualifications is in attachment A.

(2) See response to Interrogatory 1.E(2).

(3) See answer to Interrogatory 1.E(3).

Interrogatory 24

Does the current position differ from the position of the Staff in any prior proceedings? If so, identify the proceeding(s), explain the prior position, and explain the basis for the change in position.

Response

A. No. The current position does not differ from the position of the Staff in any prior proceedings.

B. None.

C. None.

D. The Staff and/or independent contractor are not presently engaged in or intend to engage in further research or work which may bear

on the issues covered in the interrogatory other than the normal staff review.

E. (1) John R. Sears is the expert whom the Staff intends to have testify on the subject matter covered in the interrogatory. A copy of his professional qualifications is in attachment A.

(2) See response to Interrogatory 1.E(2).

(3) See answer to Interrogatory 1.E(3).

Interrogatory 25

Identify any members of the Staff who dissent from the present Staff position on Joint Intervenors contention 5. Explain the reasons for which any Staff member dissents.

Response

A. None.

B. None.

C. None.

D. The Staff and/or independent contractor are not presently engaged in or intend to engage in further research or work which may bear on the issues covered in the interrogatory other than the normal staff review.

E. (1) John R. Sears is the expert whom the Staff intends to have testify on the subject matter covered in the interrogatory. A copy of his professional qualifications is in attachment A.

(2) See response to Interrogatory 1.E(2).

(3) See answer to Interrogatory 1.E(3).

Interrogatory 26

Identify the specific sections and page numbers of the FSAR for Diablo Canyon and the NRC Staff's SER and SER Supplements for Diablo Canyon, which are relied upon in formulating the Staff position on Joint Intervenors contention 5.

Response

A. The entire onsite and offsite plans were reviewed to arrive at the present conclusion. Sections III.A.1.1.1, III.A.1.2, III.A.1.2(a), III.A.1.2(b), III.A.3, III.A.3.3, III.B and III.B.1 on pages III.A-1 through page III.B-3 of SER Supplement No. 10 and sections III.A.1.1, III.A.1.2, III.A.1.2(b) and III.A.2 on pages III-1 through page III-3 of SER Supplement No. 12 were relied upon in formulating the Staff position on Joint Intervenors contention 5.

B. Onsite and offsite emergency plans.

Safety Evaluation Report related to the operation of Diablo Canyon Nuclear Power Station Units 1 and 2, Supplement Nos. 10 and 12

C. There were no documents or studies examined but not relied upon by the Staff which pertain to the subject matter questioned.

D. The Staff and/or independent contractor are not presently engaged in or intend to engage in further research or work which may bear on the issues covered in the interrogatory other than the normal staff review.

E. (1) John R. Sears is the expert whom the Staff intends to have testify on the subject matter covered in the interrogatory. A copy of his professional qualifications is in attachment A.

(2) See response to Interrogatory 1.E(2).

(3) See answer to Interrogatory 1.E(3).

Interrogatroy 27

Identify all sections and page numbers of the FSAR, SER, and SER Supplements which contain subject matter pertaining to Joint Intervenors contention 5.

Response

The Staff notes that this interrogatory is objectionable in that it asks the Staff to compile data which is as readily available to Joint Intervenors as to Staff. The Joint Intervenors can read the FSAR, SER and SER Supplements and find for themselves any portions relevant to their contention. See 4A Moore's Federal Practice, Para 33.20(3). Nevertheless, in the interest of expediting the proceeding, the Staff will answer the interrogatory.

A. Sections III.A.1.1.1, III.A.1.2, III.A.1.2(a), III.A.1.2(b), III.A.3, III.A.3.3, III.B and III.B.1 on pages III.A-1 through page III.B-3 of SER Supplement No. 10 and sections III.A.1.1, III.A.1.2, III.A.1.2(b) and III.A.2 on pages III-1 through page III-3 of SER Supplement No. 12 contain subject matter pertaining to Joint Intervenors contention 5.

B. Onsite and Offsite Emergency Plans. Safety Evaluation Report related to the operation of Diablo Canyon Nuclear Power Station Units 1 and 2, Supplement Nos. 10 and 12.

C. There were no documents or studies examined but not relied upon by the Staff which pertain to the subject matter questioned.

D. The Staff and/or independent contractor are not presently engaged in or intend to engage in further research or work which may bear on the issues covered in the interrogatory other than the normal staff review.

E. (1) John R. Sears is the expert whom the Staff intends to have testify on the subject matter covered in the interrogatory. A copy of his professional qualifications is in attachment A.

(2) See response to Interrogatory 1.E(2).

(3) See answer to Interrogatory 1.E(3).

Interrogatory 28

Does the Staff contend that Applicant, state, and local emergency response plans for Diablo Canyon as they are presently constituted comply with the requirements of Sections III.A.1.1 and III.A.1.2 of NUREG-0694?

Response

A. Yes. Our evaluation is contained in NUREG-0675, Safety Evaluation Report for Diablo Canyon, Supplement Nos. 10 and 12.

B. Onsite and Offsite Emergency Plans. Safety Evaluation Report related to the operation of Diablo Canyon Nuclear Power Station Units 1 and 2, Supplement Nos. 10 and 12

C. There were no documents or studies examined but not relied upon by the Staff which pertain to the subject matter questioned.

D. The Staff and/or independent contractor are not presently engaged in or intend to engage in further research or work which may bear on the issues covered in the interrogatory other than the normal staff review.

E. (1) John R. Sears is the expert whom the Staff intends to have testify on the subject matter covered in the interrogatory. A copy of his professional qualifications is in attachment A.

(2) See response to Interrogatory 1.E(2).

(3) See answer to Interrogatory 1.E(3).

Interrogatory 29

If the answer to interrogatory 28 is yes, specify each and every fact supporting that answer.

Response

A. The Staff has performed a complete analysis of the Applicant, state and local emergency response plans for Diablo Canyon and has found that the plans comply with the requirements of Sections III.A.1.1 and III.A.1.2 of NUREG-0694. A factual evaluation is set forth in the Safety Evaluation Report for Diablo Canyon, Supplement Nos. 10 and 12.

B. Onsite and Offsite Emergency Plans. Safety Evaluation Report related to the operation of Diablo Canyon Nuclear Power Station Units 1 and 2, Supplement Nos. 10 and 12.

C. There were no documents or studies examined but not relied upon by the Staff which pertain to the subject matter questioned.

D. The Staff and/or independent contractor are not presently engaged in or intend to engage in further research or work which may bear on the issues covered in the interrogatory other than the normal staff review.

E. (1) John R. Sears is the expert whom the Staff intends to have testify on the subject matter covered in the interrogatory. A copy of his professional qualifications is in attachment A.

(2) See response to Interrogatory 1.E(2).

(3) See answer to Interrogatory 1.E(3).

Interrogatory 30

If the answer to interrogatory 29 is no, specify in what respects the various plans cited do not comply with the requirements of Sections III.A.1 1 and III.A.1.2 of NUREG-0694, and explain what actions will be taken to remedy that noncompliance prior to fuel loading at Diablo Canyon.

Response

A. - E. Not Applicable.

Interrogatory 31

Explain the present Staff position on Joint Intervenors contention 11.

Response

A. Under NRC regulations this requirement must be implemented for full power, not for low power. The Staff position on Contention 11 is as follows· We agree that addition of the pressurizer heaters to the onsite emergency power system should not degrade the capacity, capability, or reliability of that system below an acceptable level. However, we disagree in that we believe this demonstration has been accomplished.

B. PG&E letter from P Crane to F. Miraglia (NRC) concerning full power license requirements and dated January 26, 1981 (pp. II.E-10 thru II.E.-19).

PG&E response to NUREG-0578 (Section 2.1 1).

The Staff SER on this subject has not been issued.

C. There were no documents or studies examined but not relied upon by the Staff which pertain to the subject matter questioned.

D. The Staff and/or independent contractor are not presently engaged in or intend to engage in further research or work which may bear on the issues covered in the interrogatory other than the normal staff review.

E. (1) Robert G. Fitzpatrick is the expert whom the Staff intends to have testify on the subject matter covered in the interrogatory. A copy of his professional qualifications is in attachment A.

(2) See response to Interrogatory 1.E(2).

(3) Robert G. Fitzpatrick has testified on adding pressurizer heaters to the onsite emergency power supplies in Metropolitan Edison Company (Three Mile Island Nuclear Station, Unit 1) Special Proceeding, Docket No. 50-289. He has also testified on the

adequacy of onsite and offsite power in a proceeding culminating in Florida Power and Light Company (St. Lucie Nuclear Power Plant, Unit 2), ALAB-603, 12 NRC 30 (1980).

Interrogatory 32

Does the current position differ from the position of the Staff in any prior proceedings? If so, identify the proceeding(s), explain the prior position, and explain the basis for the change in position.

Response

A. No. The current position does not differ from the position of the Staff in any prior proceedings.

B. None.

C. None.

D. The Staff and/or independent contractor are not presently engaged in or intend to engage in further research or work which may bear on the issues covered in the interrogatory other than the normal staff review.

E. (1) Robert G. Fitzpatrick is the expert whom the Staff intends to have testify on the subject matter covered in the interrogatory. A copy of his professional qualifications is in attachment A.

(2) See response to Interrogatory 1.E(2).

(3) See answer to Interrogatory 31.E(3).

Interrogatory 33

Identify any members of the Staff who dissent from the present Staff position on Joint Intervenors contention 11. Explain the reasons for which any Staff member dissents.

Response

A. There are no identified dissenting staff members.

B. None.

C. None.

D. The Staff and/or independent contractor are not presently engaged in or intend to engage in further research or work which may bear on the issues covered in the interrogatory other than the normal staff review.

E. (1) Robert G. Fitzpatrick is the expert whom the Staff intends to have testify on the subject matter covered in the interrogatory. A copy of his professional qualifications is in attachment A.

(2) See response to Interrogatory 1.E(2).

(3) See answer to Interrogatory 31.E(3).

Interrogatory 34

Identify the specific sections and page numbers of the FSAR for Diablo Canyon and the NRC Staff's SER and SER Supplements for Diablo Canyon, which are relied upon in formulating the Staff position on Joint Intervenors contention 11.

Response

A. Refer to· 1 PG&E letter from P Crane to F. Miraglia (NRC) concerning full power license requirements and dated January 26, 1981 (pp. II.E-10 thru II.E.-19).

2. PG&E response to NUREG-0578 (Section 2 1.1).

3. The Staff SER on this subject has not been issued.

B. PG&E letter from P. Crane to F. Miraglia (NRC) concerning full power license requirements and dated January 26, 1981 (pp. II.E-10 thru II E-19).

PG&E response to NUREG-0578 (section 2 1.1).

C. There were no documents or studies examined but not relied upon by the Staff which pertain to the subject matter questioned.

D. The Staff and/or independent contractor are not presently engaged in or intend to engage in further research or work which may bear on the issues covered in the interrogatory other than the normal staff review.

E. (1) Robert G. Fitzpatrick is the expert whom the Staff intends to have testify on the subject matter covered in the interrogatory. A copy of his professional qualifications is in attachment A.

(2) See response to Interrogatory 1.E(2).

(3) See answer to Interrogatory 31.E(3).

Interrogatory 35

Identify all sections and page numbers of the FSAR, SER, and SER Supplements which contain subject matter pertaining to Joint Intervenors contention 11

Response

The Staff notes that this interrogatory is objectionable in that it asks the Staff to compile data which is as readily available to Joint Intervenors as to Staff. The Joint Intervenors can read the FSAR, SER and SER Supplements and find for themselves any portions relevant to their contention. See 4A Moore's Federal Practice, Para 33 20(3). Nevertheless, in the interest of expediting the proceeding, the Staff will answer the interrogatory.

A. - E. See answer to interrogatory 34.

Interrogatory 36

Explain why the addition of the pressurizer heaters to the on-site emergency power supplies will not degrade the capacity, capability and reliability of the on-site emergency power source in violation of GDC 17.

Response

A. Given the following:

1. The Pressurizer Heaters are a resistive load.

2. There is no significant voltage transient experienced by the diesel generators upon loading the heaters as there would be is a similarly rated motor load were to be energized.

3. If a safety injection actuation signal (SIAS) is present, the heaters cannot be loaded onto the diesel generators until the SIAS has been reset.

4. If the heaters are energized by the diesel generators, they will be automatically tripped upon occurrence of an SIAS.

5. The circuit breakers used to interface the motive and control power to the heaters from the emergency buses are safety grade.

6. The same safety grade circuit breakers mentioned in C.5 above (52-1G-72 and 52-1H-74) are the devices used to trip the heaters upon SIAS.

7. Overall diesel generator loading, as well as specific heater load, are provided as readouts on the main control board.

8. Actual loading of the pressurizer heaters will not be attempted unless sufficient diesel generator (i.e., onsite emergency power supply) capacity exists (207 kw).

9. Approved written procedures will be used by plant operating personnel for use of the pressurizer heaters.

10. The design meets all II.E.3.1 requirements or provides an acceptable alternative. (See responses to Interrogatories 41 and 43 below).

We see no undue threat to the capacity, capability, and reliability of the onsite emergency power sources.

B. PG&E letter from P. Crane to F. Miraglia (NRC) concerning full power license requirements and dated January 26, 1981 (pp. II.E-10 thru II.E.-19).

C. There were no documents or studies examined but not relied upon by the Staff which pertain to the subject matter questioned.

D. The Staff and/or independent contractor are not presently engaged in or intend to engage in further research or work which may bear on the issues covered in the interrogatory other than the normal staff review.

E. (1) Robert G. Fitzpatrick is the expert whom the Staff intends to have testify on the subject matter covered in the interrogatory. A copy of his professional qualifications is in attachment A.

(2) See response to Interrogatory 1.E(2).

(3) See answer to Interrogatory 31.E(3).

Interrogatory 37

Would installation of an independent and redundant on-site emergency power supply for the pressurizer heater provide greater reliability of power supply to pressurizer heaters? Explain your answer fully.

Response

A. No. The addition of an independent dedicated emergency power supply for the pressurizer heaters would not provide greater reliability of power supply than the approved TMI-1 modification. Assuming the additional onsite emergency power supply was Class 1E as are the existing onsite emergency power supplies, the individual unreliabilities of the three power supplies would be essentially equal. From a deterministic analysis, it can be readily seen that the approved design meets the single failure criterion with respect to power supply and the proposal by Intervenors does not.

B. Response to UCS Interrogatory #39 for TMI-1 Restart.

C. There were no documents or studies examined but not relied upon by the Staff which pertain to the subject matter questioned.

D. The Staff and/or independent contractor are not presently engaged in or intend to engage in further research or work which may bear on the issues covered in the interrogatory other than the normal staff review.

E. (1) Robert G. Fitzpatrick is the expert whom the Staff intends to have testify on the subject matter covered in the interrogatory A copy of his professional qualifications is in attachment A.

(2) See response to Interrogatory 1.E(2).

(3) See answer to Interrogatory 31.E(3).

Interrogatory 38

What procedures and training have been established to make the operator aware of when and how the required pressurizer heaters shall be connected to the emergency buses, under what conditions selected loads can be shed from the emergency power source to provide sufficient capacity for connection of the pressurizer heaters, and which loads can be shed?

Response

A. PG&E has developed procedures and implemented the training of the operators to make the operator aware of when and how the required pressurizer heaters should be connected to the emergency buses. The procedures are designated as EP-OP-4 and OP-4A. They identify the conditions for shedding selected loads from the emergency power source. Loading of each ESF bus can be accomplished from the main control board (see Staff Position 3 below). Procedures have been established to identify under what conditions selected loads can be shed from the ESF bus to prevent overloading when the pressurizer heaters are connected. The procedures include provisions to ensure that the heaters are transferred to the ESF power source as described in Response to Staff

Position 3 below. The procedures also include provisions to reset the Safety Injection Actuation Signal to permit the operation of the heaters. The time required to transfer the power supplies is estimated to be less than 10 minutes and is expected to expose the operator to no more than 10 mRem.

The procedures have been written and approved and have been incorporated into the Operating Procedures of the Plant Manual. Most of the operators were trained on these procedures in October 1980. One group of operators remains to be trained on these procedures. They will be trained prior to full power operation.

The Staff has not completed its review of these detailed procedures. We will complete our review and ensure that procedures acceptable to the Staff are in effect prior to permitting operation above 5% of full power. We will also ensure that all operators have been trained on these procedures prior to their assuming operator responsibilities for operation above 5% of full power.

NRC does not have a specific training program to inform operators of what procedures to use in connecting pressurizer heaters to the emergency buses. The Applicant is required by regulation to make the operators aware of when and how the required pressurizer heaters shall be connected to the emergency buses, what conditions selected loads can be shed from the emergency power source to provide sufficient capacity for connection of pressurizer heaters, and which loads can be shed.

We have concluded that based on the low levels of residual heat in the reactor core that will result from operation at low power,

implementation of these procedures will not be necessary for operation at power levels of 5% of less.

B. 10 C.F.R. § 55.10(a)(6) (1980), 10 C.F.R. § 55 12 (1980), 10 C.F.R. § 55.33(a)(4) (1980), 10 C.F.R. § 55 Appendix A, Requalification Programs for Licensed Operators of Production and Utilization Facilities 3.b. (1980).

PG&E letter from P Crane to F. Miraglia (NRC) concerning full power license requirements and dated January 26, 1981 (pp. II.E-13).

C. There were no documents or studies examined but not relied upon by the Staff which pertain to the subject matter questioned.

D. The Staff and/or independent contractor are not presently engaged in or intend to engage in further research or work which may bear on the issues covered in the interrogatory other than the normal staff review.

E. (1) Robert G. Fitzpatrick, Samuel D. MacKay and Joseph I. McMillen are the experts whom the Staff intends to have testify on the subject matter covered in the interrogatory. A copy of their professional qualifications is in attachment A.

(2) See response to Interrogatory 1.E(2).

(3) Robert G. Fitzpatrick has testified on adding pressurizer heaters to the onsite emergency power supplies in Metropolitan Edison Company (Three Mile Island Nuclear Station, Unit 1) Special Proceeding, Docket No. 50-289. He has also testified on the adequacy of onsite and offsite power in a proceeding culminating in Florida Power and Light Company (Stf. Lucie Nuclear Power Plant, Unit 2), ALAB-603, 12 NRC 30 (1980).

Samuel D. MacKay has testified as a Project Manager who coordinated the review of the construction permit in a proceeding culminating in Virginia Electric and Power Company (Surry Power Station, Units 3 and 4), LBP-74-89 (1974).

Joseph McMillen has not previously testified in an NRC case.

Interrogatory 39

Specify whether the changeover of the heaters from normal off-site power to emergency on-site power is to be accomplished automatically or manually in case of loss of off-site power.

Response

A. Pressurizer heater power supply transfer is strictly manual.

B. PG&E letter from P. Crane to F. Miraglia (NRC) concerning full power license requirements and dated January 26, 1981 (pp. II.E-10 thru II.E.-19).

C. There were no documents or studies examined but not relied upon by the Staff which pertain to the subject matter questioned.

D. The Staff and/or independent contractor are not presently engaged in or intend to engage in further research or work which may bear on the issues covered in the interrogatory other than the normal staff review.

E. (1) Robert G. Fitzpatrick is the expert whom the Staff intends to have testify on the subject matter covered in the interrogatory. A copy of his professional qualifications is in attachment A.

(2) See response to Interrogatory 1.E(2).

(3) See answer to Interrogatory 31.E(3).

Interrogatory 40

If the changeover of pressurizer heaters is to be accomplished manually, would automatic changeover of the heaters to the on-site emergency power supply provide greater reliability of power supply to pressurizer heaters? Explain your answer fully.

Response

A. No. The automatic changeover of the heaters to the onsite emergency power supply would not provide greater reliability of power supply to the pressurizer heaters. NUREG-0578 reflects a concern for availability (only) of power for the pressurizer heaters. The remainder of the concerns embodied in Section 2.1.1 address the same concerns embodied in Contention 11, i.e. preserving the sanctity of the onsite emergency power system. Interrogatory 40 explores a different contention (unexpressed at this time) dealing with the heater system reliability. Refer to Regulatory Guide (Safety Guide) 1.6 for a discussion of the Staff philosophy on automatic bus transfers involving a safety division. We further note that automatic transfer is prohibited by Clarification (4) in Item II.E.3.1 of NUREG-0737..

B. See Regulatory Guide 1.6 (Safety Guide 6).

NUREG-0737, Item II.E.3.1.

C. There were no documents or studies examined but not relied upon by the Staff which pertain to the subject matter questioned.

D. The Staff and/or independent contractor are not presently engaged in or intend to engage in further research or work which may bear on the issues covered in the interrogatory other than the normal staff review.

E. (1) Robert G. Fitzpatrick is the expert whom the Staff intends to have testify on the subject matter covered in the interrogatory. A copy of his professional qualifications is in attachment A.

(2) See response to Interrogatory 1.E(2).

(3) See answer to Interrogatory 31.E(3).

Interrogatory 41

Does the Staff contend that each of the subpoints of the position and clarification set forth at pages 3-85 and 3-86 of NUREG-0737 is met at Diablo Canyon?

Response

A. No.

B. PG&E letter from P. Crane to F. Miraglia (NRC) concerning full power license requirements and dated January 26, 1981 (pp. II.E-10 thru II.E-19).

C. There were no documents or studies examined but not relief upon by the Staff which pertain to the subject matter questioned.

D. The Staff and/or independent contractor are not presently engaged in or intend to engage in further research or work which may bear on the issues covered in the interrogatory other than the normal staff review.

E. (1) Robert G Fitzpatrick is the expert whom the Staff intends to have testify on the subject matter covered in the interrogatory. A copy of his professional qualifications is in attachment A.

(2) See response to Interrogatory 1.E(2).

(3) See answer to Interrogatory 31.E(3).

Interrogatory 42

If the answer to interrogatory 41 is yes, specify each and every fact supporting that answer. Identify all relevant documentation, including system design description, logic diagrams, electrical schematics, test procedures, and technical specifications.

Response

A.- E. Not applicable.

Interrogatory 43

If the answer to interrogatory 41 is no, explain how the position and clarification referred to have not been met, and specify any and all actions which the Staff contends must be taken to assure compliance prior to fuel loading.

Response

A. The design does not comply with Clarification (4) in Item II.E.3.1 of NUREG-0737, in that some manual action is required outside the control room. The Staff has found this aspect of the design to

provide an acceptable alternative to the NUREG-0737 requirements and will therefore take no action to change the existing design.

B. PG&E letter from P Crane to F. Miraglia (NRC) concerning full power license requirements and dated January 26, 1981 (pp. II.E-10 thru II.E-19).

NUREG-0737, Item II.E.3.1

C. There were no documents or studies examined but not relied upon by the Staff which pertain to the subject matter questioned.

D. The Staff and/or independent contractor are not presently engaged in or intend to engage in further research or work which may bear on the issues covered in the interrogatory other than the normal staff review.

E. (1) Robert G. Fitzpatrick is the expert whom the Staff intends to have testify on the subject matter covered in the interrogatory. A copy of his professional qualifications is in attachment A.

(2) See response to Interrogatory 1.E(2).

(3) See answer to Interrogatory 31.E(3).

Interrogatory 44

Explain the present Staff position on Joint Intervenors Contention 13.

Response

A. Under NRC regulations this requirement must be implemented for full power, not for low power operation. GDC 13 states: "Instrumentation shall be provided to monitor variables and systems over their anticipated

ranges for normal operation, for anticipated operational occurences, and for accident conditions as appropriate to assure adequate safety, including those variables and systems that can affect the fission process, the integrity of the reactor core, the reactor coolant pressure boundary, and the containment and its associated systems. Appropriate controls shall be provided to maintain these variables and systems within prescribed operating ranges."

For Diablo Canyon and other PWR's the normal water level range in the reactor coolant system is within the pressurizer and is maintained by the pressurizer level control system. For transient and accident conditions resulting in low coolant inventory, the high pressure and low pressure safety injection systems are initiated on low pressure signal to reflood the primary system. Reactor vessel water level is not an appropriate input to the safety injection system since the existing corrective action is initiated by a low pressure signal well in advance of core uncovery.

Regulation 10 C.F.R. 50.55 a(h) applies only to protection systems, Reactor water level instrumentation, if installed, will be used for monitoring and operator actions only and will not provide input to protection systems.

The present Staff position is that reactor water level instrumentation for all light water reactors is necessary to provide reasonable assurance of no undue risk to the health and safety of the public.

B. PG&E's response to NUREG-0737 (Section II.F.2), from Mr. Crane (PG&E) to Mr. Miraglia (NRC), February 6, 1981.

Laurence Phillips, TMI-1 Testimony filed on December 1, 1980.

Denwood Ross TMI-1 Testimony pre-filed on March 11, 1981.

C. None

D. Oak Ridge National Laboratories and the Idaho National Engineering Lab (INEL) are presently engaged in further research and work which may bear on the issues covered in the interrogatory.

E. (1) Laurence Phillips is the expert whom the Staff intends to have testify on the subject matter covered in this interrogatory. A copy of his professional qualifications is in attachment A.

(2) See response to Interrogatory 1 E(2).

(3) Laurence Phillips has testified

(a) on inadequate core cooling in Metropolitan Edison Company (Three Mile Island, Unit 1) Special Proceeding, Docket No. 50-289,

(b) on errors in emergency core cooling evaluation models in a proceeding culminating in Florida Power and Light Company (St. Lucie Nuclear Power Plant, Unit 2), ALAB-603, 12 NRC 30 (1980), and

(c) on loose parts monitoring in Public Service Company of Oklahoma (Black Fox Station, Units 1 and 2), Docket Nos. 50-556, 50-557.

Interrogatory 45

Does the current position differ from the position of the Staff in any prior proceedings? If so, identify the proceeding(s), explain the prior position, and explain the basis for the change in position.

A. No. However, the NRC, in their "Clarification of TMI Action Plan Requirements" (NUREG-0737) letter to all licenses and applicants for operating licenses, dated October, 1980, rescheduled and detailed the steps to be taken by licensees and applicants in response to the additional instrumentation for detection of inadequate core cooling (ICC)requirement established by the TMI Lessons Learned Task Force in Action Plan II.F.2 of NUREG-0578, and subsequent clarification to that document (the H. Denton letter to all Operating Nuclear Power Plants on "Discussion of Lessons Learned Short-Term Requirements, dated October 30, 1979).

B. NUREG-0737

NUREG-0578

H. Denton letter to All Operating Nuclear Power Plants on "Discussion of Lessons Learned Short-Term Requirements," dated October 30, 1979).

C. None

D. The Staff and/or independent contractor are not presently engaged in or intend to engage in further research or work which may bear on the issues covered in the interrogatory other than normal Staff review.

E. (1) Laurence Phillips is the expert whom the Staff intends to have testify on the subject matter covered in the interrogatory. A copy of his professional qualifications is in attachment A.

(2) See response to Interrogatory 1E(2).

(3) Laurence Phillips has testified:

(a) on inadequate core cooling in Metropolitan Edison Company (Three Mile Island, Unit 1) Special Proceeding, Docket No. 50-289,

(b) on errors in emergency core cooling evaluation models in a proceeding culminating in Florida Power and Light Company (St. Lucie Nuclear Power Plant, Unit 2), ALAB-603, 12 NRC 30 (1980), and

(c) on loose parts monitoring in Public Service Company of Oklahoma (Black Fox Station, Units 1 and 2), Docket Nos. 50-556, 50-557.

Interrogatory 46

Identify any members of the Staff who dissent from the present staff position on Joint Intervenors Contention 13. Explain the reasons for which may Staff member dissents.

Response

A. None.

B. None.

C. None.

D. The Staff and/or independent contractor are not presently engaged in or intend to engage in further research or work which may bear on the issues covered in the interrogatory other than normal Staff review.

E. (1) Laurence Phillips is the expert whom the Staff intends to have testify on the subject matter covered in this interrogatory. A copy of his professional qualifications is in attachment A.

(2) See response to Interrogatory 1.E(2).

(3) Laurence Phillips has testified:

(a) on inadequate core cooling in Metropolitan Edison Company (Three Mile Island, Unit 1) Special Proceeding, Docket No. 50-289,

(b) on errors in emergency core cooling evaluation models in a proceeding culminating in Florida Power and Light Company (St. Lucie Nuclear Power Plant, Unit 2), ALAB-603, 12 NRC 30 (1980), and

(c) on loose parts monitoring in Public Service Company of Oklahoma (Black Fox Station, Units 1 and 2), Docket Nos. 50-556, 50-557

Interrogatory 47

Identify the specific sections and page numbers of the FSAR for Diablo Canyon and the NRC Staff's SER and SER supplement for Diablo Canyon, which are relied upon in formulating the Staff position on Joint Intervenors Contention 13.

Response

A. SER, Supplement No. 190 Pages II.F-6, 7, 8, and 9. PG&E response to NUREG-0578 (section 2.1.3b).

B. Diablo Canyon SER Supplement No. 10. PG&E response to NUREG0578 (section 2.1.3b).

C. There were no documents or studies examined but what relied upon by the Staff which pertain to the subject matter questioned.

D. The Staff and/or independent contractor are not presently engaged in or intend to engage in further research or work which may bear on the issues covered in the interrogatory other than normal Staff review.

E. (1) Laurence Phillips is the expert whom the Staff intends to have testify on the subject matter covered in the interrogatory. A copy of his professional qualifications is in attachment A.

(2) See response to Interrogatory 1.E.(2).

(3) See answer to Interrogatory 44.E.(3).

Interrogatory 48

Identify all sections and page numbers of the FSAR, SER, and SER Supplement which contain subject matter pertaining to Joint Intervenors contention 13.

Response

The Staff notes that this interrogatory is objectionable in that it asks the Staff to compile data which is as readily available to Joint Intervenors as to the Staff. The Joint Intervenors can read the FSAR, SER and SER Supplements and find for themselves any portions relevant to their contention. See 4A Moore's Federal Practice, Para. 33.20(3). Nevertheless, in the interest of expediting the proceeding, the Staff will answer the interrogatory.

A. - E. See response to item 47 above.

Interrogatory 49

Would a direct measurement of the reactor coolant level be of assistance to the reactor operator in determining the most appropriate remedial actions during a small break LOCA?

Response

A. Yes. The Staff believes that a direct measurement of the reactor coolant level would provide display of additional reactor coolant system status information which will assist the operator for diagnosis of an event or condition during both the course of the event and after it has occurred. During the event, the operator should use this information either as the basis for initiating emergency actions or as a confirmatory signal to complete the otherwise indicated action. The Staff believes that the use of all pertinent status information as input to operator action is one of the lessons learned from TMI-2.

B. St. Lucie event, "Report on the St. Lucie 1 Natural Circulation Cooldown on June 11, 1980," by E.V. Imbro, Office for Analysis and Evaluation of Operational Data, USNRC.

Denwood Ross TMI Testimony pre-filed on March 11, 1981.

C. There were no documents or studies examined but not relied upon by the Staff which pertain to the subject matter questioned.

D. Oak Ridge National Laboratories is presently engaged in further research and work which may bear on the issues covered in the interrogatory.

E (1) Laurence Phillips is the expert whom the Staff intends to have testify on the subject matter covered in this interrogatory A copy of his professional qualifications is in attachment A.

(2) See response to Interrogatory 1.E(2).

(3) Laurence Phillips has testified

(a) on inadequate core cooling in Metropolitan Edison Company (Three Mile Island, Unit 1) Special Proceeding, Docket No. 50-289,

(b) on errors in emergency core cooling evaluation models in a proceeding culminating in Florida Power and Light Company (St. Lucie Nuclear Power Plant, Unit 2), ALAB-603, 12 NRC 30 (1980), and

(c) on loose parts monitoring in Public Service Company of Oklahoma (Black Fox Station, Units 1 and 2), Docket Nos. 50-556, 50-557.

Interrogatory 50

Explain how present procedures and instrumentation permit prompt recognition of low reactor coolant level and inadequate core cooling.

Response

A. The present procedures and instrumentation permit prompt recognition of low reactor coolant level and inadequate core cooling by instructing the operator to monitor for conditions of inadequate core cooling during transient and accident conditions, by providing the operator with criteria for the recognition of conditions indicative of inadequate core cooling and providing two instrumention systems for

reading temperatures at the exit of the reactor core. The "P-250" instrument prints out the temperatures of 65 separate thermocouples at the exit of the core. If 5 or more of these readings exceed 1200°F, inadequate core cooling is recognized. The Honeywell instrument on the incore board indicates the temperatures of 62 of the 65 core exit thermocouples. If any 3 of the 10 centrally located thermocouples indicate temperatures greater than 700°F, inadequate core cooling is recognized.

B. PGandE Response to NUREG-0737, Item II.F.2 Instrumentation for Detection of Inadequate Core Cooling (Proprietary Submittal, dated February 6, 1981). The procedures given in this reference are still under review by Westinghouse and by the NRC Staff. We will require that procedures acceptable to the Staff are in effect prior to permitting operation above 5% of full power. Implementation of these procedures will not be necessary for operation at 5% of full power or less.

C. There were no documents or studies examined but not relied upon by the Staff which pertain to the subject matter questioned.

D. The Staff and/or independent contractor are not presently engaged in or intend to engage in further research or work which may bear on the issues covered in the interrogatory other than normal Staff review.

E. (1) Samuel MacKay is the expert whom the Staff intends to hve testify on the subject matter covered in the interrogatory. A copy of his professional qualifications is in attachment A.

(2) See response to Interrogatory 1E(2).

(3) Samuel D. MacKay has testified as a Project Manager who coordinated the review of the construction permit in a proceeding culminating in Virginia Electric and Power Company (Surry Power Station, Units 3 and 4), LBP-74-89 (1974).

Interrogatory 51

Does the Staff contend that the instrumentation for detection of inadequate core cooling described in the Applicant's response to Item II.F.2 of NUREG-0737 (submitted February 6, 1981) meets the concern of Contention 13 that prior to fuel loading Diablo Canyon have a capability to measure directly the water level in the fuel assemblies? Explain your answer fully.

Response

A. No. Item II.F.2 of NUREG-0737 provides the NRC position on the requirements of instrumentation for detection of inadequate core cooling. There is no requirement for capability to measure directly the water level in the fuel assemblies prior to fuel loading.

In addition to the existing instrumentation including two wide range reactor coolant pressure sensors, eight wide range RTD's, 65 core exit thermocouples and one subcooling margin monitor, the applicant has committed to (1) install Reactor Vessel Level Instrumentation System (RVLIS) complete the incore thermocouple readout upgrade prior to January 1, 1982, (2) complete the incore thermocouple wiring upgrade during the first refueling outage, and (3) complete the reactor coolant

pressure transmitter relocation prior to fuel loading. The Staff believes the applicant meets NUREG-0737 requirements.

After the installation of RVLIS, the system shall be tested and calibrated and shall be reviewed and accepted by the Staff before the system becomes operational.

B. PG&E response to NUREG-0737 (Section II.F.2).

C. There were no documents or studies examined but not relied upon by the Staff which pertain to the subject matter questioned.

D. The Staff and/or independent contractor are not presently engaged in or intend to engage in further research or work which may bear on the issues covered in the interrogatory other than normal Staff review.

E. (1) Laurence Phillips is the expert whom the Staff intends to have testify on the subject matter covered in this interrogatory. A copy of his professional qualifications is in attachment A.

(2) See response to Interrogatory 1.E(2).

(3) Laurence Phillips has testified

(a) on inadequate core cooling in Metropolitan Edison Company (Three Mile Island, Unit 1) Special Proceeding, Docket No. 50-289,

(b) on errors in emergency core cooling evaluation models in a proceeding culminating in Florida Power and Light Company (St. Lucie Nuclear Power Plant, Unit 2), ALAB-603, 12 NRC 30 (1980), and

(c) on loose parts monitoring in

Public Service Company of Oklahoma (Black Fox Station, Units 1 and 2), Docket Nos. 50-556, 50-557.

Interrogatory 52

Will the instrumentation for detection of inadequate core cooling referred to in the Applicant's response to Item II.F.2 of NUREG-0737 be installed and operational prior to fuel loading at Diablo Canyon?

Response

A. Yes, unless fuel loading preceeds completion of those items which are not required until January 1, 1981. See response to item 51.

B. PG&E response to NUREG-0737 (Section II.F.2).

C. There were no documents or studies examined but not relied upon by the Staff which pertain to the subject matter questioned.

D. The Staff and/or independent contractor are not presently engaged in or intend to engage in further research or work which may bear on the issues covered in the interrogatory other than normal Staff review.

E. (1) Laurence Phillips is the expert whom the Staff intends to have testify on the subject matter covered in this interrogatory. A copy of his professional qualifications is in attachment A.

(2) See response to Interrogatory 1.E(2).

(3) Laurence Phillips has testified

(a) on inadequate core cooling in Metropolitan Edison Company (Three Mile Island, Unit 1) Special Proceeding, Docket No 50-289,

(b) on errors in emergency core cooling evaluation models in a proceeding culminating in Florida Power and Light Company (St. Lucie Nuclear Power Plant, Unit 2), ALAB-603, 12 NRC 30 (1980), and

(c) on loose parts monitoring in Public Service Company of Oklahoma (Black Fox Station, Units 1 and 2), Docket Nos. 50-556, 50-557.

Interrogatory 53

Discuss how the reliability of information from the applicant's proposed instrumentation compares with the reliability of information from direct measurement of the reactor coolant level.

Response

A. See response to Interrogatories 44, 49, and 51. Since there is no past experience with direct measurement of the reactor cooland level on PWRs, the information from other instrumentation proposed by the applicant for monitoring inadequate core cooling would be considered more reliable than the information from direct measurement of the reactor coolant level which is still under the development.

B. PG&E response to NUREG-0578 (Section 2.1 3 b).

PG&E response to NUREG-0737 (Section II.F.2).

C. There were no documents or studies examined but not relied upon by the Staff which pertain to the subject matter questioned.

D. The Staff and/or independent contractor are not presently engaged in or intend to engage in further research or work which may bear on the issues covered in the interrogatory other than normal Staff review.

E. (1) Laurence Phillips is the expert whom the Staff intends to have testify on the subject matter covered in this interrogatory. A copy of his professional qualifications is in attachment A.

(2) See response to Interrogatory 1.E(2).

(3) Laurence Phillips has testified

(a) on inadequate core cooling in Metropolitan Edison Company (Three Mile Island, Unit 1) Special Proceeding, Docket No. 50-289,

(b) on errors in emergency core cooling evaluation models in a proceeding culminating in Florida Power and Light Company (St. Lucie Nuclear Power Plant, Unit 2), ALAB-603, 12 NRC 30 (1980), and

(c) on loose parts monitoring in Public Service Company of Oklahoma (Black Fox Station, Units 1 and 2), Docket Nos. 50-556, 50-557.

Interrogatory 54

If the answer to interrogatory 52 is no, discuss how the reliability of information from the existing instrumentation at Diablo Canyon for detection of inadequate core cooling compares with the reliability of information from the direct measurement of the reactor coolant level.

Response

A. - E. It is not applicable.

Interrogatory 55

Describe the training program to inform operators of new procedures associated with the proposed instrumentation referred to in the Applicant's response to Item II.F.2 of NUREG-0737.

Response

A. NRC does not have a specific training program to inform operators of the new procedures associated with the use of the reactor vessel level instrumentation system. The Applicant is required by regulation to train operators in the use of all safety related instrumentation including the use of the reactor vessel level instrumentation system.

B. 10 C.F.R. §55.10(a)(6) (1980), 10 C.F.R. §55.12 (1980), 10 C.F.R. §55.33(a)(4) (1980), 10 C.F.R. §55 Appendix A, Requalification Programs for Licensed Operators of Production and Utilization Facilities 3.b (1980).

C. There were no documents or studies examined but not relied upon by the Staff which pertain to the subject matter questioned.

D. The Staff and/or independent contractor are not presently engaged in or intend to engage in further research or work which may bear on the issues covered in the interrogatory other than normal Staff review.

D. The Staff and/or independent contractor are not presently engaged in or intend to engage in further research or work which may bear on the issues covered in the interrogatory other than normal Staff review.

E. (1) Joseph McMillen is the expert whom the Staff intends to have testify on the subject matter covered in the interrogatory. A copy of his professional qualifications is in attachment A.

(2) See response to Interrogatory 1E(2).

(3) Joseph I. McMillen has not previously testified in an NRC case.

Interrogatory 56

Explain the present Staff position on Joint Intervenors contention 24.

Response

A. Under NRC regulations this requirement must be implemented for full power, not for low power. The present staff position with respect to Joint Intervenors contention 24 is that the applicant shall conduct testing by July 1, 1981 to qualify the safety and relief valves under expected operating conditions for design basis transients and accident conditions. PG&E has agreed to this schedule.

B. Diablo Canyon SER Supplement No. 10, Section II.D.2. PG&E Company Response to NUREG-0578: Short Term Lessons Learned Requirements dated February 29, 1980, Section 2.1.3.a.

C. There were no documents or studies examined but not relied upon by the Staff which pertain to the subject matter questioned

D. The Staff and/or independent contractor are not presently engaged in or intend to engage in further research or work which may bear on the issues covered in the interrogatory other than normal Staff review.

E. (1) Edgar G. Hemminger is the expert whom the Staff intends to have testify on the subject matter covered in the interrogatory. A copy of his professional qualifications is in attachment A.

(2) See Response to Interrogatory 1E(2).

(3) He has not previously testifed in an NRC case.

Interrogatory 57

Does the current position differ from the position of the Staff in any prior proceedings? If so, identify the proceeding(s), explain the prior position, and explain the basis for the change in position.

Response

A. This position does not differ from any taken in prior Diablo proceedings.

B. None.

C. None.

D. The Staff and/or independent contractor are not presently engaged in or intend to engage in further research or work which may bear on the issues covered in the interrogatory other than normal Staff review.

E. (1) Edgar G. Hemminger is the expert whom the Staff intends to have testify on the subject matter covered in the interrogatory. A copy of his professional qualifications is in attachment A.

(2) See Response to Interrogatory 1E(2).

(3) He has not previously testified in an NRC case.

Interrogatory 58

Identify any members of the Staff who dissent from the present Staff position on joint Intervenors contention 24. Explain the reasons for which any Staff member dissents.

Response

A. No Staff members differ from the above described position.

B. None.

C. None.

D. The Staff and/or independent contractor are not presently engaged in or intend to engage in further research or work which may bear on the issues covered in the interrogatory other than normal Staff review.

E. (1) Edgar G. Hemminger is the expert whom the Staff intends to have testify on the subject matter covered in the interrogatory. A copy of his professional qualifications is in attachment A.

(2) See Response to Interrogatory 1E(2).

(3) He has not previously testified in an NRC case.

Interrogatory 59

Identify the specific sections and page numbers of the FSAR for Diablo Canyon and the NRC Staff's SER and SER Supplements for Diablo Canyon, which are relied upon in formulating the Staff position on Joint Intervenors contention 24.

Response

A. The specific sections and page numbers of the Diablo Canyon FSAR which were used by the Staff in formulating a position on contention 24 are as follows:

Section	Page	Description of Technical Content
FSAR 3.2	FSAR 3.2-7	Refers to standards used in design of Code Class I Fluid systems and components.
FSAR 5.2	FSAR Table 5.2-1	Lists the specific code and addenda which were used for Safety and Relief valve design
NUREG-0737 II.D.1	3-72	Describes the requirement for performance testing of reactor safety and relief valves.
NUREG-0737 Enclosure 2		Shows implementation schedule for applicants for an operating license.
SER Supp. No. 10 Section II.D.2	II.D-1 to II.D-3	

B. Diablo Canyon SER Supplement No. 10, Section II.D.2 Diablo Canyon FSAR Sections 3.2 and 5.2. NUREG-0737, Enclosure 2 and Section II.D.1

C There were no documents or studies examined but not relied upon by the Staff which pertain to the subject matter questioned.

D. The Staff and/or independent contractor are not presently engaged in or intend to engage in further research or work which may bear on the issues covered in the interrogatory other than normal Staff review.

E. (1) Edgar G. Hemminger is the expert whom the Staff intends to have testify on the subject matter covered in the interrogatory. A copy of his professional qualifications is in attachment A.

(2) See response to Interrogatory 1E(2).

(3) He has not previously testified in an NRC case.

Interrogatory 60

Identify all sections and page numbers of the FSAR, SER, and SER Supplements which contain subject matter pertaining to Joint Intervenors contention 24.

Response

The Staff notes that this interrogatory is objectionable in that it asks the Staff to compile data which is as readily available to Joint Intervenors as to Staff. The Joint Intervenors can read the FSAR, SER and SER Supplements and find for themselves any portions relevant to their contention. See 4A Moore's Federal Practice, ¶ 33.20(3). Nevertheless, in the interest of expediting the proceeding, the Staff will answer the interrogatory.

A. - E. See answer to interrogatory 59.

Interrogatory 61

Describe in detail the methods by which the reactor coolant system relief and safety valves have been qualified to verify the capability of these valves to function during normal, transient and accident conditions. This description should include specification of the environmental conditions assumed during normal, transient and accident situations and the means by which these environmental conditions were derived. Provide references to the Regulatory Guides applied in this analysis.

Response

A. The reactor coolant system safety valves were originally designed and tested for operation on saturated steam in accordance with the applicable edition and addenda of Section III of the ASME Boiler and Pressure Vessel Code. Additionally, the safety valves have been designed to be functional after exposure to loads resulting from the maximum hypothetical earthquake for the Diablo Canyon site. As required by Article 9 of the Code, the safety valve relieving capacity has been provided so that the pressure limitation specified in the Code will be maintained under all of the system transients or accidents postulated to occur. The power operated relief valves (PORVs) are air operated valves and do not replace a code required safety valve nor do they contribute to the Code required relieving capacity for the reactor coolant system.

The staff's position requires that the safety and relief valves function as expected during design transient and accident conditions. The extent to which the Staff position relative to the reactor coolant system safety and relief valves is not yet satisfied is that the tests

performed to date did not cover loadings which result from transition flow or solid fluid flow. A test program has been initiated by the Electric Power Research Institute (EPRI) which will address safety and relief valve operability for transition and solid fluid flow.

Pacific Gas and Electric Company has committed to participating in this test program and has as one of its objectives to satisfy the long term requirements on safety and relief valve testing as set forth in Section 2.1.2 of NUREG-0578, "TMI-2 Lessons Learned Task Force Status Report and Short-Term Recommendations". In the Staff's SER Supplement 10 on Diablo Canyon (NUREG-0675), the Staff states that "on the basis of our preliminary discussions to date with EPRI regarding the feasibility of meeting the clarified valve testing requirements of NUREG-0578 (including discussions at the December 17 meeting), and on the basis of PG&E's assurance that the proposed EPRI program will be applicable to the Diablo Canyon design and consistent with the NRC position in this regard, we believe that there is adequate assurance at this point that the NUREG-0578 requirement regarding performance verification of RCS relief and safety valves will be met satisfactorily for Diablo Canyon." Should this program demonstrate that these valves are not qualified for the above stated loadings the staff will require the licensee to take corrective actions. Present schedules indicate that valve testing will be completed by July 1, 1981.

B. Diablo Canyon SER Supplement No. 10, Section II.D.2. PG&E Company Response to NUREG-0578: Short Term Lessons Learned Requirements dated February 29, 1980, Section 2.1.3.a.

C. There were no documents or studies examined but not relied upon by the Staff which pertain to the subject matter questioned.

D. EGG is presently engaged in monitoring the Electric Power Research Institute (EPRI) test program which may bear on the issues covered in the interrogatory.

E. (1) Edgar G. Hemminger is the expert whom the Staff intends to have testify on the subject matter covered in the interrogatory. A copy of his professional qualifications is in attachment A.

(2) See response to interrogatory 1E(2).

(3) He has not previously testified in an NRC case.

Interrogatory 62

Did the Staff fully apply the analysis of accidents and anticipated operational occurrences referenced in Regulatory Guide 1.70, Revision 2, to determine the expected valve operating conditions? If not, provide the justification for failing to do so.

Response

A. Regulatory Guide 1.70, Revision 2, was issued in 1975, well after the issuance of the NRC Staff's Safety Evaluation Report dated October 16, 1974 and, hence, was not used in the preparation of the SAR or the staff evaluation of the SAR.

It should be noted that the intent of the reference to Regulatory Guide 1.70 in the Staff position of Section 2.1.2 in NUREG-0578 was that the maximum pressure and temperature limits of the testing program be based on the transients and accidents analyzed in the FSAR. The Staff

did not intend to have new analyses performed to obtain these testing limits which were part of a short-term staff requirement. Hence, in reference 1, which provided clarification of the Lessons Learned Short-Term Requirements, the restriction to Revision 2 of Regulatory Guide 1.70 was eliminated.

B. Letter of 10/30/79 from H. Denton to Licensees entitled "Discussion of Lessons Learned Short-Term Requirements.

C. None.

D. The Staff and/or independent contractor are not presently engaged in or intend to engage in further research or work which may bear on the issues covered in the interrogatory other than normal Staff review.

E. (1) Edgar G. Hemminger is the expert whom the Staff intends to have testify on the subject matter covered in the interrogatory. A copy of his professional qualifications is in attachment A.

(2) See response to interrogatory 1E(2).

(3) He has not previously testified in an NRC case.

Interrogatory 63

Explain how the Licensee chose the single failures applied to these analyses so as to maximize the dynamic forces on the safety and relief valves.

Response

A. The Staff has no information concerning any single failures used to maximize the dynamic forces on the safety and relief valves. In the

FSAR, the applicant stated that the effect of the water seal upstream of the safety valves was included in the analyses of the dynamic loads. The performance testing of safety and relief valves and associated piping required in NUREG-0578 and discussed in the response to Interrogatory 65 is pertinent to this subject.

B. Diablo Canyon FSAR.

C. None.

D. The Staff and/or independent contractor are not presently engaged in or intend to engage in further research or work which may bear on the issues covered in the interrogatory other than normal Staff review.

E. (1) Edgar G. Hemminger is the expert whom the Staff intends to have testify on the subject matter covered in the interrogatory. A copy of his professional qualifications is in attachment A.

(2) See response to interrogatory 1E(2).

(3) He has not previously testified in an NRC case.

Interrogatory 64

Explain how the test pressures utilized in these analyses were determined to be the highest pressures predicted by conventional safety analysis procedures.

Response

A. In the calculations of system overpressure, the Applicant stated in the FSAR that the upper limit of overpressure protection is based upon the positive surge of the reactor coolant produced as a result of turbine

trip under full load, assuming the core continues to produce full power and normal feedwater is maintained. The self-actuated safety vavles are sized on the basis of steam flow from the pressurizer to accommodate this surge at the setpoint of 2500 psia and a total accumulation of 3 percent. Note that no credit is taken from the relief capability provided by the power operated relief valves during this surge.

B. Diablo Canyon FSAR.

C. None.

D. The Staff and/or independent contractor are not presently engaged in or intend to engage in further research or work which may bear on the issues covered in the interrogatory other than normal Staff review.

E. (1) Edgar G. Hemminger is the expert whom the Staff intends to have testify on the subject matter covered in the interrogatory. A copy of his professional qualifications is in attachment A.

(2) See response to interrogatory 1E(2).

(3) He has not previously testified in an NRC case.

Interrogatory 65

How were the test conditions for qualification of the control circuitry, piping and supports associated with the reactor coolant system relief and safety valves determined?

Response

A. The reactor coolant system safety and relief valve piping and supports were qualified by design and testing in accordance with the

criteria USAS B31.7. The combined stress due to the effects of dead load, internal pressure, seismic, and safety valve reactions were included in the analysis. Reaction loads in the discharge piping were based on discharge of the loop seal liquid through the pressurizer safety valve as described in the FSAR, Section 5.2. The pressurizer power operated relief valves have also been provided with a water seal. The relief discharge lines have also been analyzed for pressure, deadweight, thermal and seismic loading.

The power operated relief valves (PORV) are air operated valves and do not replace a code required safety valve nor does it contribute to the Code required relieving capacity for the reactor coolant system. The purpose of the PORV is to limit the lifting frequency of the code safety valves by relieving at a lower set point.

Since the TMI-2 accident the Lessons Learned Task Force (LLTF) has required in NUREG-0578 that redundant emergency power be provided for PORV's and associated block valves in all PWR's so that the valves can open and close if offsite power is not available. Additionally, the LLTF recommended an evaluation be made, on a generic basis, as to whether the PORV's should be upgraded to a safety grade classification. Depending on the results of this study the Staff may require further upgrading of the PWR PORV's, and associated block valves and control circuitry.

Finally in implementation of the LLTF recommendations, the Staff has required that both safety and relief valves and associated piping and supports in PWR's be functional performance capability tested under expected operating conditions for design basis transients and accidents. Some question arises because of the failure of the PORV at TMI-2 and a

PORV failure at a foreign reactor as to whether these valves and the associated piping and supports can sustain the loads imposed during accidents in which transition flow or single phase steam, or water flow is relieved. As noted in NUREG-0578 this testing requirement, also applicable to Diablo Canyon, must be completed by 7/1/81.

B. Diablo Canyon FSAR.

NUREG-0578.

C. None.

D. There may be a generic study on whether PORV's should be upgraded to a safety grade classification.

E. (1) Edgar G. Hemminger is the expert whom the Staff intends to have testify on the subject matter covered in the interrogatory. A copy of his professional qualifications is in attachment A.

(2) See response to interrogatory 1E(2).

(3) He has not previously testified in an NRC case.

Interrogatory 66

Explain how the qualification testing of the reactor coolant system relief and safety valves and associated control circuitry, piping and supports complies with GDC 1, 14, 15, and 30.

Response

A. Compliance with GDC 1, 14, 15, and 30 is by design, fabrication, testing and inspection in accordance with recognized standards and codes which are commensurate with the safety functions to be performed.

The safety and relief valve piping and supports are in accordance with USAS B31.7.

The safety valves themselves are qualified in accordance with ASME code Section III, article 9, 1965. The valves are tested per the above code requirements and as specified by the Diablo Canyon Technical Specifications which require 50% retest at each refueling. The relief valve control circuitry and its operation was tested during pre-operational testing.

B.

C. None.

D. The Staff and/or independent contractor are not presently engaged in or intend to engage in further research or work which may bear on the issues covered in the interrogatory other than normal Staff review.

E. (1) Edgar G. Hemminger is the expert whom the Staff intends to have testify on the subject matter covered in the interrogatory. A copy of his professional qualifications is in attachment A.

(2) See response to interrogatory 1E(2).

(3) He has not previously testified in an NRC case.

Attorney for objections:

Bradley W. Jones

Bradley W. Jones
Counsel for NRC Staff

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, Units Nos. 1 and 2)	)	

AFFIRMATION OF PREPARATION

I prepared the answer to Interrogatories 1 through and including 30.

They are true and correct to the best of my knowledge and belief.

Peter S. Tam

Peter S. Tam

Subscribed and sworn to before me
this 5th day of March, 1981

Marilyn Tollenster
Notary Public in and for the State
of Maryland, Montgomery County

My Commission expires: July 1, 1982

I am duly authorized to answer Interrogatory Nos. 31 through 37, a portion of No. 38 and Nos. 39 through 43. They are true and correct to the best of my knowledge and belief.

Robert G. Fitzpatrick

Subscribed and sworn to before me
this 13th day of March, 1981.

Notary Public in and for the State
of Maryland, Montgomery County

My Commission expires: July 1, 1982

I am duly authorized to answer Interrogatories No. 50 and a portion of No. 38. They are true and correct to the best of my knowledge and belief.

Samuel D. MacKay

Subscribed and sworn to before me
this 13th day of March, 1981.

Notary Public in and for the State
of Maryland, Montgomery County

My Commission expires: July 1, 1982

I am duly authorized to answer Interrogatory Nos. 44 through 49 and Nos. 51 through 54. They are true and correct to the best of my knowledge and belief.

Tai Huang

Subscribed and sworn to before me
this 13th day of March, 1981.

Notary Public in and for the State
of Maryland, Montgomery County

My Commission expires: July 1, 1982

I am duly authorized to answer Interrogatories 62, 63 and 64. They are true and correct to the best of my knowledge and belief.

Frank R. Orr

Frank Orr

Subscribed and sworn to before me
this 16th day of March, 1981.

Notary Public in and for the
State of Maryland, Montgomery County

My Commission expires: July 1, 1982

I am duly authorized to answer Interrogatory Nos. 56-61 and 65-66. They are true and correct to the best of my knowledge and belief.

E C Hemminger
Ed G. Hemminger

Subscribed and sworn to before me
this 13th day of March, 1981.

Marilyn Gallenstein
Notary Public in and for the State
of Maryland, Montgomery County

My Commission expires: July 1, 1982

I am duly authorized to answer Interrogatories No. 55 and a portion of No. 38. They are true and correct to the best of my knowledge and belief.

Joseph L. McMillen
Joseph McMillen

Subscribed and sworn to before me
this 16th day of March, 1981.

Marilyn Gallenstein
Notary Public in and for the State
of Maryland, Montgomery County

My Commission expires: July 1, 1982

1. I am employed by the U.S. Nuclear Regulatory Commission as Project Manager in the Division of Licensing, Office of Nuclear Reactor Regulation.

2. I am the Project Manager assigned to the Diablo Canyon Power Plant.

3. I am duly authorized to review the answers to Interrogatory Nos. 1 through 66 and I hereby certify that the answers given are true to the best of my knowledge.

Bartholomew C. Buckley

Bartholomew C. Buckley

Subscribed and sworn to before me
this 13th day of March, 1981.

Notary Public in and for the State
of Maryland, Montgomery County.

My Commission expires: July 1, 1982

ATTACHMENT A

JOHN R. SEARS

RESUME'

Prior to 1952, I was employed in field jobs in various aspects of mechanical engineering. In 1952, I joined Brookhaven National Laboratory as a Reactor Shift Supervisor on the Brookhaven Graphite Reactor. While at Brookhaven, I completed a series of courses given by the Nuclear Engineering Department in nuclear engineering. These courses were patterned on the ORSORT programs. In 1956, I was appointed Project Engineer on the Brookhaven Medical Research Reactor. I was a member of the design group, participated in critical design experiments, wrote specifications, coauthored the hazards report, was responsible for field inspection and contractor liaison, trained operators and loaded and started up the reactor. About three months after start-up, in 1959, following the successful completion of proof tests and demonstration of the reactor in its design operating mode for boron capture therapy of brain cancer, I accepted a position as reactor inspector with the Division of Inspection, U. S. Atomic Energy Commission. In 1960, I transferred, as a reactor inpsector, to the newly-formed Division of Compliance. I was responsible for the inspection, for safety and compliance with license requirements, of the licensed reactors and the fuel fabrication and fuel processing plants. which use more than critical amounts of special nuclear material, in the Eastern United States.

In September 1968, I transferred to the Operational Safety Branch, Directorate of Licensing. My responsibility included development of appropriate guides for evaluation of operational aspect of license applications and staff assistance in review of power reactor applicants submittals in the areas of Organization and Management. Personnel Qualifications, Training Programs, Procedures and Administrative Control, Review and Audit, Start-up Testing Programs Industrial Security and Emergency Planning.

The Branch was reorganized as the Industrial Security and Emergency Planning Branch in April 1974 to place increased emphasis and attention upon areas of physical security and emergency planning.

In 1976 I transferred to the Divison of Operating Reactors as the sole reviewer responsible for review of emergency planning for all the operating reactors in the United States.

New York City College, 1950 - Mechanical Engineering
Argonne International School of Reactor Technology, 1961 - Reactor Control Course
GE BWR System Design Course, 1972
Popo-U.S. Army, 1974 - Course in Industrial Defense and Disaster Planning
Instructor at DCPA , 1976, 1977 - Course in Emergency Planning
Director, 1962 - Reactor Program, Atoms for Peace Exhibit, Bangkok, Thailand
Director, 1966 - Atoms for Peace Exhibit, Utrecht, Holland

EDUCATIONAL AND PROFESSIONAL QUALIFICATIONS
OF ROBERT G. FITZPATRICK

EDUCATION

B.S. Electrical Engineering 1971; Northeastern University, Boston, Mass.

M.S. Electrical Engineering, 1972; Northeastern University, Boston, Mass.

Major: Electrical Power Systems Engineering

PROFESSIONAL QUALIFICATIONS

I am presently Section Leader of the Electrical Section of the Power Systems Branch. In this position, I provide technical supervision and review of the work of reactor systems engineers conducting evaluations of operating reactor problems, license amandments for operating reactors, license applications, generic assessments and special project assignments.

I joined the NRC (ACE) in 1974 as a member of the Electrical, Instrumentation and Controls System Branch and in January 1977 I was assigned to the newly formed Power Systems Branch. My duties during the above periods involved the technical review of electrical systems (onsite and offsite power, and instrumentation and control). For approximately fifteen months following the March 1979 accident at Three Mile Island, I was detailed to the special Three Mile Island Support Group.

From 1972 - 1974 I worked for Yankee Atomic Electrical Company in Westboro, Massachusetts. I was assigned to the Electrical and Control Engineering Group and my duties included work on the Yankee operating nuclear plants and the Seabrook Project. (Prior to this I spent 3 years with Yankee as a cooperative education student while attending Northeastern University.)

I am a member of the IEEE and also represent the NRC as a member of IEEE Nuclear Power Engineering Committee Subcommittee 4 "Auxiliary Power Systems." This Committee is charged with developing standards for onsite and offsite power systems.

SAMUEL D. MAC KAY

PROFESSIONAL QUALIFICATIONS

PROCEDURES AND TEST REVIEW BRANCH

I am a Principal Operational Safety Engineer on the staff of the Nuclear Regulatory Commission. I am responsible for reviewing and evaluating the radiological safety considerations associated with the operation of nuclear powered generating stations.

I received a Bachelor of Science Degree in Physics from Siena College in 1950 and I studied for a Master's Degree in Nuclear Physics at Union University.

I am in my 13th year with the Regulatory staff and have functioned in an operating reactors branch as well as a branch that reviews construction permit applications.

Prior to joining the Regulatory staff, I worked for General Electric Company at the Nuclear Energy Division in San Jose, California, from 1965 to 1968 as a field engineer for the startup of nuclear power plants.

From 1959 to 1965 I was associated with Allis Chalmers Company's Elk River Reactor Project. I prepared the startup program for that reactor, supervised many of the preoperational and startup tests and served as a licensed reactor operator and then shift supervisor. I was subsequently the Operations Supervisor and then the Project Manager.

Prior to Elk River, I was employed by Alco Products Company from 1956 to 1959. I performed critical facility tests for the Army Packaged Power Reactor and later was responsible for evaluating the reactor core performance by conducting tests on the operating reactor.

From 1952 to 1956 I worked at the Knolls Atomic Power Laboratory on various critical assemblies measuring reactivity coefficients and neutron cross sections and performing neutron activation analyses.

This is a total of 29 years experience in nuclear engineering and I am a professional nuclear engineer certified by the state of California.

PROFESSIONAL QUALIFICATIONS AND EDUCATION
OF JOSEPH I. McMILLEN

I am a Reactor Engineer in the Operator Licensing Branch, Division of Human Factors Safety. As a member of this Branch, I am responsible for developing and administering examinations to persons who apply for a license to operate nuclear facilities. I have been a member of this Branch since June 1979 when I was detailed from the Office of Management Information and Program Control, Operations Evaluation Branch. I was selected for this detail because of my previous association with the Operator Licensing Branch (1970-1973) as a full time employee and as a part-time consultant examiner from 1960 thru 1970.

From 1977 to 1979, I worked in the Operations Evaluation Branch and was responsible for reviewing and evaluating reports of occurrences and incidents at facilities for generic safety implications. I selected from these events those that appeared to have a wide interest and wrote them up to be published in a report "Power Reactor Events".

From 1973 to 1977, I participated in the development and implementation of Standard Technical Specifications for nuclear power plants. I had complete responsibility for development of the generic technical specification for the General Electric Boiling Water Reactor.

From 1965-1970, I worked in the Chicago operations office of the Atomic Energy Commission and had lead responsibility for the reactor safety evaluation program, including operator training and qualifications.

From 1962-1965, I was in the Canoga Park area office with lead responsibility for safety review of 7 small reactors and critical assemblies, including operator training and qualifications. I was also Chairman of a joint safety subcommittee for the SNAP-IOA project.

From 1959-1962, I was a site representative responsible for on-site guidance and review of activities of contractors in the design, development and construction of a closed cycle boiling water reactor. I reviewed tests, procedures and operator training.

From 1947-1959, I worked at Argonne National Laboratory beginning as an apprentice reactor operator and worked my way up through the ranks to become operations supervisor in 1954 of the newest Research Reactor. I was responsible for all activities associated with that operation including the training of new operators. I left Argonne in 1959 on a two year leave of absence to assist the AEC in the construction and startup, including training of the operators, for the Elk River Reactor.

I attended the University of Illinois at Nave Pier for one year, 1946-47. And Roosevelt University, Night School from 1948 to 1959 working toward a B.S. in Management Engineering.

Laurence E. Phillips

CORE PERFORMANCE BRANCH
DIVISION OF SYSTEMS INTEGRATION
U. S. NUCLEAR REGULATORY COMMISSION

PROFESSIONAL QUALIFICATIONS

I am employed as a Section Leader of the Thermal-Hydraulics Section in the Core Performance Branch of DSI.

I graduated from the University of Cincinnati with a Chemical Engineering degree in 1954. After serving two years as an officer in the United States Army, I have been continuously employed in the nuclear engineering profession since January, 1957. I received a M.S. degree with nuclear physics major from Union College of Schenectady, N. Y., in 1961. I am a registered Professional Engineer, Certificate #E-026547, in the state of Ohio.

In my present work assignment at the NRC, I have supervisory responsibility for the review of the reactor core thermal-hydraulic design submitted in all reactor construction permit and operating license applications. In addition, my section participates in the review of analytical models used in the licensing evaluation of the core thermal-hydraulic behavior under various operating and postulated accident transient conditions. The latter responsibility includes technical review of the functional requirements for core monitoring systems to provide capability for detection and response to inadequate core cooling conditions.

Prior to joining the NRC staff in December, 1974, I was employed by NAI Corporation as a Senior Associate. In this capacity, I was responsible for the development and application of computer codes for analysis of nuclear reactor cores. I acted as a consultant to nuclear operating utilities in the use of these codes for analysis of their operation, and in the solution of general nuclear engineering problems. My tenure at NAI was from 1967 through 1974.

From 1962 to 1967, I was employed by Allis Chalmers Mfg. Co. My assignments during that period included supervisory responsibility for the safety analyses and licensing of the LaCrosse Boiling Water Reactor.

From 1958 to 1962, I was employed by Alco Products where I was project manager for the design, development, and fabrication of heat exchange equipment for nuclear liquid metal projects. Prior to that I was with the Nuclear Division of the Martin Company.

EDGAR G. HEMMINGER

OFFICE OF NUCLEAR REACTOR REGULATION

U. S. NUCLEAR REGULATORY COMMISSION

PROFESSIONAL QUALIFICATIONS

I am a Mechanical Engineer in the Division of Engineering, Mechanical Engineering Branch, Office of Nuclear Reactor Regulation of the United States Nuclear Regulatory Commission. I am responsible for review and evaluation of the structural integrity, operability, and functional capability of safety related mechanical equipment and components.

I hold a Bachelor of Science Degree in Mechanical Engineering from Ohio University and a Master of Science Degree in Mechanical Engineering from Drexel University and am a licensed Professional Engineer in the State of New York.

From 1965 thru 1979, I was employed by the General Electric Company at the Knolls Atomic Power Laboratory in Schenectady, New York. My work experience was in the area of thermal and stress analysis of reactor plant components and equipment. I have specifically evaluated steam generators, reactor vessels, nozzles, closure heads, pumps and piping systems. Using finite element computer methods, I have modeled the vessel closure head and core barrel bolt up region to determine preload relaxation and lift off for various operating and accident conditions. I have also used results of the above type calculations in conjunction with fracture mechanics methods to establish safe heat up and cooldown pressure and temperature limits for normal plant operation.

In 1973, I completed a one year training program for test and start up of naval reactor plants aboard ship. From 1973 thru 1979, I contributed to the construction, start up and power range physics testing of eight reactor plants aboard ship. My primary duties were to review the test procedures and test data for acceptance testing of naval reactor plants aboard ship and to provide technical support to the shipyard in resolution of equipment problems dealing primarily with valves, pumps, and heat exchangers.

I joined the NRC in October, 1979.