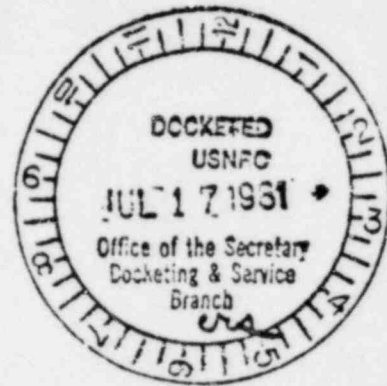


UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION  
ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:  
John F. Wolf, Chairman  
Glenn O. Bright  
Dr. Jerry Kline



SERVED JUL 17 1981

In the Matter of:	)	
	)	
PACIFIC GAS AND ELECTRIC COMPANY	)	Docket No. 50-275-0L
	)	50-323-0L
(Diablo Canyon Nuclear Plant,	)	(Low Power Test
Units 1 and 2)	)	Proceeding)
	)	
	)	July 17, 1981

PARTIAL INITIAL DECISION

Appearances

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David S. Fleischaker, Esq. and Joel R. Reynolds, Esq., for Joint Intervenors

Herbert H. Brown, Esq., Byron S. Georgiou, Esq., Lawrence C. Lanpher, Esq., for the State of California represented by Governor Edmund G. Brown, Jr.

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## I. INTRODUCTION

### (1) Background

1. This matter, involving the Diablo Canyon Nuclear Plant, Units 1 and 2, is a contested operating license proceeding. The Licensing Board completed hearings in February, 1979 and the record was closed on March 12 of that year.

2. A partial initial decision was issued by the Board on June 12, 1978 which ruled on the environmental issues in the proceeding. (LBP-78-19). A further partial initial decision was issued on September 26, 1979. (LBP-79-26). This latter decision included, inter alia, the Board's rulings on seismic and security issues. The Joint Intervenors filed exceptions to both these rulings with the Appeal Board. They were joined by Governor Brown, who had been admitted to the proceeding on November 15, 1979 as an interested state after the record had closed.

3. The Appeal Board's response to Intervenor's pleadings on the security issue was to vacate the Board's ruling and to rehear testimony from all parties. (ALAB-580, 11 NRC 227 (February 15, 1980)). On the seismic issue, the Appeal Board granted a motion by the Intervenors to reopen the record for new evidence derived from a major earthquake which had occurred subsequent to the closing of the record. (ALAB-598, 11 NRC 876 (June 24, 1980)). The Appeal Board then conducted hearings on the new evidence.

4. In other actions contained in the Licensing Board's September 26, 1979 Partial Initial Decision the Board deferred several items necessary to the completion of an initial decision inasmuch as the potential impact upon them of the Three-Mile Island accident could not be determined. These issues, all of which were included in the proceedings at the Board's request, were quality assurance, generic safety issues and emergency planning. The radon, or Table S-3 issue, was deferred pending ongoing action by the Appeal Board.

5. On June 20, 1980, the Commission issued "Further Commission Guidance for Power Reactor Operating Licenses." The policy statement referenced a document entitled "TMI-Related Requirements for New Operating Licenses" (NUREG-0694) dated June 1980. On July 14, 1980, PG&E filed a motion before the Board requesting fuel loading and low power operation pursuant to 10 CFR 50.57(c) and the Commission's policy statement. After receiving responses from the parties, the Board issued an order accepting the Applicant's motion and setting October 27, 1980, as the date for filing of any contentions. This date was subsequently extended to December 3, 1980.

6. In November 1980, the Commission issued a document entitled "Clarification of TMI-Action Plan Requirements" (NUREG-0737), which superseded NUREG-0694. This was followed by additional guidance to the Board by Commission Order CLI-80-42, dated December 18, 1980. On December 19, 1980, the Commission denied a Joint Intervenors' request for directed certification which was before it and stated that the Board had the authority to rule on the matters raised by Joint Intervenors.

7. The Board scheduled a prehearing conference for January 28 and 29, 1981 for the purpose of hearing argument on the twenty-seven contentions raised by Joint Intervenors. During this conference it became apparent that the parties had interpreted the Commission's policy statements in diametrically opposite ways: the Staff and the Applicant arguing that none of the contentions were admissible, principally on procedural grounds; the Joint Intervenors and Governor Brown alleging that all the contentions must be admitted as a result of the Commission's guidance.

8. The Board did not agree with either of these extreme positions, reasoning that the Commission could not have intended such a simplistic disposition of the issues. The Board, therefore, formulated its own interpretation of the Commission's intent, which is explained in detail in the Prehearing Conference Order of February 13, 1981. Under this interpretation, the Board admitted four of the contentions and deferred one on Class Nine Accidents.<sup>1/</sup> Subsequently, on April 30, 1981, the Board granted summary disposition on two of these contentions, leaving two contentions at issue, one involving emergency planning and one concerning the testing of relief, safety and block valves.

9. On April 1, 1981, the Commission issued an Order, CLI-81-5, which provided additional guidance to the Board, consistent with its Memorandum and Order CLI-80-42, in its consideration of TMI-related matters. The Board reviewed this additional guidance to determine if its Order of February 13, 1981, which was based on CLI-80-42, was still in agreement

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<sup>1/</sup> The deferred contention on Class Nine Accidents was effectively denied in a Board Order on June 19, 1981, after the Appeal Board had affirmed the Licensing Board's earlier seismic findings.

with Commission policy. As a result of this review, the Board believes that its interpretation of the application of CLI-80-42, as set forth in detail in our Order of February 13, 1981, was in compliance with the intent of the Commission. In particular, the Board had decided that contentions concerning those matters directly addressed in NUREG-0737 would be considered as showing good cause for both reopening the record and for untimely filing of contentions. Absent such direct relation to NUREG-0737, contentions would not be allowed without a full compliance with the requirements of 10 CFR 2.714(a)(1) and the Appeal Board ruling in 7 NRC 320 (1978). Contentions would, of course, be required to comply with the basis and specificity requirements of 10 CFR 2.714(b).

10. On April 6, 1981, the Board issued a Notice of Hearing on the motion of Applicant for fuel loading and low power testing, to be held in San Luis Obispo, California, beginning May 19, 1981. Subsequently, the hearing was held, beginning May 19, 1981 and lasting through May 22, 1981. The various issues and other matters of concern are discussed below.

(2) Findings by the Atomic Safety and Licensing Appeal Board

11. As discussed, supra, the Appeal Board vacated the Board's findings on the security issue and assumed jurisdiction for further hearings on the matter. Hearings have been held, but to date the Board is not aware of a decision having been issued. This Board finds that absent an Appeal Board decision it does not have the authority to make any kind of ruling on this issue. Our decision herein, therefore, is not complete without resolution of the issue. We hereby invite the attention of the Commission to this matter in their review of this decision.

12. The Appeal Board also reopened the record on the seismic issue to take new evidence obtained through analysis of an earthquake which occurred after the Board's decision had been rendered. The Appeal Board has rendered a decision on this matter in which it affirmed the Board's earlier decision. (ALAB-644, June 16, 1981). The Board considers this matter closed, barring further Commission action.

13. The Appeal Board has also reviewed the other matters contained in our Partial Initial Decisions of June 12, 1978 (LBP-78-19) and September 27, 1979 (LBP-79-26) and has affirmed said decisions (ALAB-644, June 16, 1981). Accordingly, we consider these matters to be closed.

## II. FINDINGS OF FACT

### (a) Decision on Issues Previously Held in Abeyance

#### (1) Radon

14. The Board held an evidentiary hearing on October 18-19, 1977 on a number of issues which included Revised Table S-3 values concerning the environmental effects of the Uranium Fuel Cycle. At the time of the hearing, the Board admitted into evidence a then current version of Table S-3. It deferred ruling in its initial decision of September 27, 1979 because of the publication of ALAB-562 which raised doubts concerning the correctness of radon values which appeared in that Table.

15. At a conference of counsel held July 27, 1978 in preparation for further hearings, the Board advised Joint Intervenors that they would have an opportunity if they wished to submit a contention on radon as part of the Uranium Fuel Cycle. By letter of August 7, 1978 the Joint Intervenors stated that they would not submit a contention on radon. In this proceeding, therefore, neither Table S-3 radon values nor health effects of radon are contested issues.

16. Table S-3 was promulgated generically by the Commission to enable consideration of the environmental effects of the Uranium Fuel Cycle in individual reactor licensing cases without the necessity of holding separate repetitive trials in a large number of individual cases. Subsequent to a Commission decision on April 11, 1978 that the then current radon values in Table S-3 were incorrect the Appeal Board consolidated a number of cases and scheduled hearings for the purpose of determining more accurate values of radon emissions associated with the Uranium Fuel Cycle.



17. The Appeal Board issued its decision, ALAB-640, on May 13, 1981. That Board found that a composite mine and mill would together release radon at the rate of 6600 Ci/AFR (Curies per annual fuel requirement). (AFR is defined as the amount of uranium fuel needed to operate a 1000 MWe power plant at 80% capacity for one year). The Appeal Board also examined three alternatives for determining long-term release rates after mining and milling have ceased. The Board found radon releases as follows: Case 1, sealed and reclaimed mines with covered tailings; 21 Ci/AFR per year. Case 2, unsealed and unreclaimed mines with covered tailings; 91 Ci/AFR per year. Case 3, unsealed and unreclaimed mines with uncovered tailings; 230 Ci/AFR per year. These findings give this Board sufficient information to determine the radon releases attributable to the fuel needed for operation of the Diablo Canyon Nuclear Power Plant.

18. The two unit Diablo Canyon Power Plant is designed for a combined net steady state electrical power level of 2190 MWe. Full power operation will therefore require 2.19 AFR. In order to determine the radon releases attributable to Diablo Canyon under full-power 2-unit operation we need only multiply the values found by the Appeal Board by the factor 2.19. These results are shown in Table 1.

Table 1

Radon Release for Diablo Canyon Units 1 and 2 Fuel Cycle

Rating (MWe): 1084 (Unit 1); 1106 (Unit 2); 2190 (combined)

Annual Fuel Requirement	2.19 AFR
Annual Release of Radon	14454 Ci/yr
Lifetime fuel requirement (30 years)	65.7 AFR
Lifetime release of radon	433620 Ci
Continuing Releases Case 1	1350 Ci/yr
Continuing Releases Case 2	5979 Ci/yr
Continuing Releases Case 3	15111 Ci/yr

19. The radon emission values attributable to the fuel cycle at Diablo Canyon are similar in magnitude to those of other operating reactors which were considered in ALAB-640. The Board has found nothing novel or unusual about radon emissions associated with Diablo Canyon which would cause us to alter the cost benefit balance which was performed in LBP-78-19, 7 NRC 989 (1978). There being no contested issues on this matter we include the radon values herein only to complete the record and find no cause to reconsider the environmental cost-benefit balance previously performed.

(2) Quality Assurance

20. On April 29, 1977, the Intervenors submitted a motion to the Board requesting admission of a new contention regarding quality assurance. Oral arguments were heard on May 12, 1977. In its order of May 25, 1977, the Board denied the contention on QA on the bases of untimeliness, not required by law or regulation, lack of specificity and unconscionable delay in the proceeding. The Board, on its own motion, further directed Applicant and Staff to present testimony on the QA program at Diablo Canyon by having knowledgeable witnesses at a subsequent hearing. The Board further stated that its primary interest was in obtaining, for inclusion in the record, a brief description of the DCNP QA program, its chronology and current status.

21. On October 18 and 19, 1977, further hearings were held on non-seismic health and safety matters. In response to the Board's request for testimony on the DCNP quality assurance plan, the Applicant presented Dr. Russel P. Wischow, their Director of Quality Assurance (Prefiled testimony following Tr. 3458; direct examination Tr. 3597-3610). Dr. Wischow set forth the background and history of the Quality Assurance Department of PG&E, and explained the operational relationships between officers and staff of Applicant who are responsible for implementation of the quality assurance program for plant operation in compliance with 10 CFR 50, Appendix B. He further testified that Applicant has constantly upgraded its quality assurance program to meet AEC (NRC) requirements, and detailed the mechanics of the program used to correct imperfections discovered in the construction phase of the facility. (Tr. 3603-05).

22. At the conclusion of the Board's questions of Dr. Wischow, the opportunity for cross examination was extended to all parties. The offer was refused. (Tr. 3609).

23. The Staff presented a panel of three witnesses, Alfred M. Garland, from the Quality Assurance Branch of the Office of Nuclear Reactor Regulation, and Talbert Young, Jr. and William G. Albert, from the Office of Inspection and Enforcement, Region V. After providing a description of the Diablo Canyon quality assurance programs for both the construction and operation phases, they further offered evaluations of the numerous allegations which had been put forth in statements made by one of the Intervenor's consultants over a period of time (Garland, Albert and Young testimony following Tr. 3614, p. 2-62).

24. Based on their evaluation of both the construction and operation quality assurance programs, the allegations made by Intervenor's consultant and on numerous inspections of the facility, the Staff witnesses concluded that (1) the Design and Construction Quality Assurance Program implementation was consistent with the status of the project, and that (2) Applicant has satisfactorily demonstrated that quality-related activities can be conducted in accordance with the requirements of Appendix B of 10 CFR 50 during the operations phase of the facility. (Testimony at 62-63). In reply to questions from the Board, the witnesses testified that none of the quality assurance matters mentioned in a Government Accounting Office report (July 22, 1977) were substantial, and that no significant areas of concern had been revealed in the Diablo Canyon quality assurance implementation by either Intervenors or the GAO. (Tr. 3616-18).

25. After the Board completed its questions, the opportunity to cross-examine the Staff witnesses was extended again to all parties. The opportunity was again refused. (Tr. 3618).

26. When the Board issued its Partial Initial Decision (Operating Licensing Proceedings), on September 27, 1979, the Board review of the Quality Assurance Program was not included in order to see if the investigation of the Three-Mile Island accident would occasion the proposal of a significant revision of required quality assurance procedures. This has not happened, as evidenced by the Staff's update of its review of the Diablo Canyon quality assurance program for the operations phase as of April, 1981. They have provided a current description of the plan, and state that their review of the program description for the operations phase has verified that the criteria of Appendix B to 10 CFR 50 have been addressed satisfactorily. Accordingly, the Staff concludes that PG&E's description of the quality assurance program is in compliance with applicable NRC regulations, and, therefore, is acceptable for full power operation. (Staff Ex. 24, SER Supp. No. 13, pp. 17-1 through 17-4).

27. Based on the uncontroverted testimony of both Applicant and Staff, the Board finds that the Diablo Canyon quality assurance programs for both the Design and Construction phase and the Operations Phase have been and are in compliance with the requirements of 10 CFR 50, Appendix B, and that the implementation of both programs is acceptable to the Board.

(3) Unresolved Generic Safety Issues

28. The Atomic Safety and Licensing Appeal Boards have issued two decisions which provide guidance to both the NRC Staff and the Atomic Safety and Licensing Boards in their consideration of unresolved safety items, or "generic safety issues." These decisions are Gulf State Utilities Company (River Bend Station, Units 1 and 2), ALAB-444, 6 NRC 760 (1977), and Virginia Electric and Power Company (North Anna Nuclear Power Station, Units 1 and 2) ALAB-491, 8 NRC 245 (1978)). We note that the Staff's evaluation of these matters must be in the public record, and that the Board's review of these matters must "...entail an inquiry into whether the Staff review satisfactorily has come to grips with any unresolved generic safety problems which might have an impact upon the operation of the nuclear facility under consideration."

29. The Board brought these decisions to the attention of the parties in these proceedings in a memorandum dated September 18, 1978. On February 13, 1979, shortly before the record was closed on the seismic issue, the Board received a submittal from the Staff on generic safety issues. Staff Exhibit 13 (Aycok Professional Qualifications), Staff Exhibit 14 (Crocker Professional Qualifications) and Staff Exhibit 15 (Affidavit of Aycok, Crocker and Allison Relating to the Status of NRC Staff Activities Regarding Generic Safety Issues) were marked for identification (Tr. 10,176). Staff Exhibits 13, 14 and 15 were admitted into evidence by Board Order of February 26, 1979.

30. The Board deferred its consideration of the documentation until after the record was closed. After reviewing the Staff exhibits an Order Relative to Generic Safety Issues was directed to the NRC

Staff which stated that the documentation was adequate for all issues, except for Generic Safety Issue A9 (Anticipated Transients Without Scram, or ATWS). On March 2, 1979, the Staff submitted its testimony on the status of ATWS in the form of an affidavit of Dennis P. Allison and Ashok C. Thadani dated March 1, 1979. The Staff moved that the Affidavit and NUREG-0460, Vol. 3 be placed in evidence as Staff Exhibit No. 16. By Memorandum of March 12, 1979, the Board granted Staff's motion.

31. When the Board issued its Partial Initial Decision (Operating Licensing Proceedings) on September 27, 1979, the Generic Safety Issues review by the Board was not included in order to see what effect, if any, the investigation of the Three-Mile Island accident might have on the issues which must be considered. With the issuance of NUREG-0737 and the guidance provided by the Commission on TMI-related matters contained in CLI-80-42 and CLI-81-5, the Board can find no explicit impact of the TMI accident on the Generic Safety Issues.

32. In June, 1980, the Staff reviewed the list of class A generic safety issues and provided the record an update. (Staff Exhibit No. 20, SER Supplement No. 9, pp. B-1 to B-5). They found that additional information should be provided with respect to four of the generic tasks. Additional information was presented on A-44--Station Blackout, (SER Supp. No. 9, p. B-3, 5), A-9--ATWS, (SER Supp. Sections 15.0), A-11--Reactor Vessel Material Toughness (SER Supp. Sections 5.2) and A-24--Qualification of Class IE Safety-Related Equipment, (SER Supp. Sections 7.8).

33. With the documentation described above, the Board now has a sound record to review in order to evaluate the present situation. The Staff has provided a thorough description of its extensive program for dealing with generic issues in Staff Exhibits 13-16. From them, we learn that, as unresolved safety issues are identified, a high-level Staff group determines whether immediate action is necessary to assure continuing safety or whether the safety significance of the issue is such that operations and licensing actions may continue while a longer term generic review is underway. To date, an extensive list of such issues have been identified from various sources such as the ACRS, Staff members, operating experience, and research results. The Staff has screened all of these generic issues and placed them into one of four categories, A, B, C, or D, according to their potential safety significance and urgency.

34. Staff Exhibit 15 (and its Appendix A), Staff Exhibit 16, the SER, and SER supplements fully discuss Category A tasks perceived by the Staff to be of some applicability to Diablo Canyon. In its discussion of each of the Category A tasks applicable to Diablo Canyon in Staff Exhibits 15 and 16 and Appendix A to Staff Exhibit 15, the Staff submits a detailed description of each issue, details of the plan for resolving the particular issue, or an indication that the issue is resolved, or a discussion of why it believes that licensing may proceed pending resolution of any issue. We conclude that the Staff has set forth these problems, programs, and bases clearly and rationally and the public record of the proceeding now reflects the Staff's views and perception of these elements.



35. In each instance, the Staff has concluded that one or more of the following bases for continued licensing applies: (1) the problem has been resolved for the reactor under study, (2) a resolution can reasonably be expected before operation, (3) there will be no safety implications until after years of operation and alternative means will exist to avoid undue risk to the public, (4) current standards are adequate but confirmatory studies are desirable while licensing continues, (5) a problem is so unlikely to occur as to be an incredible event, (6) the task is for the purpose of resolving unclear, conflicting, or impractical requirements of the regulations, or, (7) presently adequate criteria can be improved. The Board has determined that the documentation furnished by the Staff with respect to Category A generic safety issues has satisfied the Board's concern on all issues.

36. The Staff did not deal with the B, C, and D Category problems in Staff Exhibit 15; responding to River Bend explaining that:

"Of those remaining Category B, C, and D tasks that are related to plant safety and that are applicable to the Diablo Canyon facilities, we have identified none that could not be resolved either by system alterations using available techniques and equipment or by operational modifications in the event that the Staff's review of the issue revealed that current criteria required upgrading during operation. On this basis and the Steering Committee's judgment that the remaining Category B, C and D issues are of lesser safety significance than Category A issues and that not even all of the Category A issues qualify as "Unresolved Safety Issues," detailed information on the remaining Category B, C and D tasks is not, in our judgment, necessary and we have not included any such information for the remaining Category B, C and D tasks." (Staff Exhibit 15, pp. 6-3, 6-4)

37. The Staff defines Category B tasks as those tasks not having the "potentially significant public safety implication(s)" referred to in River Bend. We accept the Staff's conclusion because it is also a working conclusion which must be made by the Staff in the discharge of its responsibilities. It is within the Staff's discretion to determine in the first instance which tasks require resolution before others and whether licensing may safely proceed without a program for resolution of the tasks.

38. The Board concludes that the Staff's evidence on generic safety problems is not inconsistent with River Bend. The evidentiary record demonstrates that Category B tasks can be resolved, if necessary, by system alterations using available techniques or operational modifications. (Staff Exhibit 15, p. 6-3). The record also demonstrates that no Category B task requires resolution to remedy significant defects in facility design. (Staff Exhibit 15, pp. 6-3 and 6-4). The Staff has thoroughly explained its program for the review of the generic tasks to determine whether a plan for resolution is required. And most important, the Staff has explained why licensing can safely proceed in the face of the problem.

39. With these elements, the Staff has met the substantive requirements or River Bend. We have undertaken to ascertain whether the Staff dealt appropriately with the "unresolved" issues in this operating license proceeding. We have looked to see whether the generic safety issues have been taken into account in a manner that is reasonable from a regulatory point of view and would be adequate to justify operation. We have searched the entire record to see if there

are adequate explanations on all the issues pertinent to the Diablo Canyon facility, and have found that there is a basis for the Staff's decision to allow operation to go forward.

40. Accordingly, there is nothing with respect to the generic safety problems in either Category A or B which prevents this Board from finding under 10 CFR §50.35a that the proposed Diablo Canyon facility can be operated without undue risk to the health and safety of the public.

(b) Decision on Issues Considered at Evidentiary Hearing

(1) Emergency Planning

Contention 4 reads:

Numerous studies arising out of the accident at TMI Nuclear Power Plant have shown the need for upgrading emergency response planning. Based upon these studies, the Commission promulgated revised emergency planning regulations effective November 3, 1980. The Applicant has failed to demonstrate that the combined Applicant, State and local emergency response plans for Diablo Canyon comply with those revised regulations ("Final Regulations on Emergency Planning," 45 Fed. Reg. 55402 (August 19, 1980)).

(i) Discussion

41. The Board accepted this contention in its prehearing conference order of February 13, 1981 "insofar as it pertains to issues related to fuel loading and low power testing." There is no dispute in this proceeding as to whether the current combined Applicant, State and local emergency plans comply with the Final Regulations on Emergency Planning (10 CFR 50.47 and Appendix E to Part 50 of the Commission's regulations). All parties agree that the current emergency plans do not comply with these regulations. Applicant and Staff argue that full compliance is not necessary for the purpose of fuel loading and low power testing. Joint Intervenors and Governor Brown argue that the regulations do not specifically exclude low power testing from compliance, that NUREG-0737 specifically requires compliance, and in any event if an exemption from the regulations is justified it must be based on the demonstration specified in 10 CFR 50.47(c)(1), which the applicant has not adequately done. The Board reads contention 4 as consisting of two issues: (1) whether full compliance with the current regulations is needed for fuel loading and low power testing or whether

some lesser standard is appropriate; and (2) if a lesser standard for emergency planning for low-power testing is permissible what should the requirements consist of for this case?

42. The development of requirements for emergency planning for both low-power testing and full-power operation followed a complicated pathway after the TMI accident. This contributed to uncertainty and delay in this case. The Board believes that a review of these developments will aid in understanding the decision it reaches herein.

(ii) Development of Emergency Planning Requirement After the Accident at TMI

43. The Board held hearings on non-seismic issues which included the current Diablo Canyon Emergency Plan on October 18-19, 1977. Before an initial decision could be issued the accident at Three-Mile Island occurred. After further hearings on other matters, the Board issued a partial initial decision on a limited number of issues on September 27, 1979. In that decision it deferred ruling on emergency planning because of its uncertainty as to how the Lessons Learned from Three-Mile Island-2 would affect that activity.

44. A number of changes in regulation and guidance on emergency planning later materialized as a result of the TMI accident. These changes contributed in part to the Board's decision to reopen the record in its February 13, 1981 prehearing conference order and to its ruling in an order dated April 6, 1981 that the record in this case was inadequate. As part of the change which occurred in the wake of the TMI-2 accident, responsibility for offsite emergency planning around

nuclear power plants was transferred from NRC to the Federal Emergency Management Agency (FEMA) by presidential decision. A Memorandum of Understanding between NRC and FEMA was issued January 11, 1980 which detailed lead responsibilities of FEMA and of NRC and cooperative efforts between the two agencies. While the overall responsibility for licensing nuclear power plants remains with NRC the memorandum specifies that FEMA has lead responsibility for review of State and local emergency plans and NRC has lead responsibility for review of Applicant's onsite emergency plans.

45. In one of its early actions under its new responsibility, FEMA concurred on February 14, 1980 with NRC's plan to license the Sequoyah nuclear power plant for low-power testing based on NRC's statement of minimal hazard and on FEMA's knowledge of the condition of Tennessee's State and local emergency plans. (Brown Ex. 4 and 5).

46. On March 12, 1980 FEMA recognized that there were three other plants including Diablo Canyon which would soon seek authorization for low power testing. (Brown Ex. 1). The FEMA/NRC Steering Committee determined that on an interim basis:

Public health and safety is adequately protected if such a facility is located in a state which had received a concurrence under the previous voluntary concurrence program administered by the NRC and based on evaluation by a multiagency Federal Regional Advisory Committee. In addition operator plans at individual sites must be consistent with both the existing NRC appendix E to 10 CFR Part 50 and NRC Regulatory Guide 1.101 .... (Brown Ex. 1.)

47. The NRC stipulated in the interim agreement that facility operator plans "... are in compliance with Appendix E and are consistent with Regulatory Guide 1.101." (Brown Ex. 1).

48. In June 1980, NRC published NUREG-0694, "TMI-Related Requirements for New Operating Licenses." NUREG-0694 adopted the above-referenced standard for emergency preparedness for low power testing which had been developed by the FEMA/NRC steering committee.

49. In August 1980, the Commission published its upgraded final rule on emergency planning with an effective date of November 3, 1980.

50. In November 1980, the Commission published NUREG-0737, "Clarification of TMI Action Plan Requirements." Also in November 1980, the final version of NUREG-0654, FEMA-REP-1, REV-1, "Criteria for the Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," was published.

51. On December 18, 1980, the Commission published a revised statement of policy in which it stated that NUREG-0737 supersedes NUREG-0694 and that the requirements of NUREG-0737, together with existing regulations, formed the basis for issuance of new operating licenses. NUREG-0737 required that emergency preparedness for nuclear power plants be upgraded to Appendix E to 10 CFR Part 50 standards prior to fuel load.

52. As the Board then saw matters, the lessons from TMI-2 had finally been learned as regards emergency planning because of the adoption of 10 CFR 50.47, New Appendix E to Part 50, the publication of NUREG-0654 and the issuance of NUREG-0737. The Board stated in an order dated April 30, 1981 that these regulations and guidance now control emergency planning for nuclear power plants.

53. In so stating, the Board was not unmindful of the flexibility in the regulations afforded by 10 CFR 50.47(c)(1). That flexibility would permit an applicant ... "an opportunity to demonstrate to the satisfaction of the Commission that deficiencies in the plans are not significant for the plant in question." The Board perceived that the application for a license to load fuel and conduct low power testing at Diablo Canyon might reasonably be a candidate for the exercise of that flexibility if the appropriate demonstration could be made.

54. The Board therefore informed the parties at the opening of the evidentiary hearing on May 19, 1981 that:

We're guided by the regulations, as you gentlemen know:  
Part 50.47, Appendix E to Part 50 and the implementing document  
NUREG-0654. (Tr. 10,578.)

and later the Board stated that:

If there are any of the sixteen points listed in NUREG-0654 for which an exemption is sought under 50.47(c), we would like to know the reasons you have for believing that one or another of those points do not apply for low-power testing. (Tr. 10,578-79.)

55. In the course of the evidentiary hearing (May 21), Staff counsel delivered to the Board a Commission-approved policy paper entitled, "Emergency Preparedness," SECY-81-188, dated April 22, 1981, which changed the schedule for compliance with Appendix E as shown in NUREG-0737 from fuel loading to full power operation. The Board had had no previous knowledge of this Commission action.



56. In the light of this new policy guidance the Board concludes that a point by point examination of the planning standards of NUREG-0654, which would be necessary to obtain an exemption from full compliance with 50.47 under 50.47(c)(1), is no longer needed. Indeed the conclusion is now inescapable that the Commission clearly intends that full compliance with the 16 planning standards in NUREG-0654 and the provisions of Appendix E are not required for fuel loading and low power testing at Diablo Canyon and the Board so finds.

57. In opposition to this view, Governor Brown argued that 10 CFR 50.47 is a regulation of the Commission which cannot be altered by a Commission approved staff paper in the absence of further rulemaking. Thus in spite of the promulgation of SECY-81-188, the full weight of 10 CFR 50.47 and Appendix E to 10 CFR Part 50 still applies and any relief therefrom must be sought under 50.47(c)(1).

58. The applicant, however, points out correctly that it is not the substance of part 50.47 which has been altered but only the schedule for implementation. The regulation itself gives no such schedule. It is contained in NUREG-0737 which does not have the status of regulation.

59. Thus the Board finds that SECY-81-188 simply establishes new policy to replace old policy which was, as explained by the staff, inadvertently promulgated in NUREG-0737. The Board sees no reason why the Commission cannot correct errors in its policy statements when they are discovered. Accordingly, it must be concluded that Governor Brown's arguments are without merit and must be rejected. The Commission's policy of emergency planning for low power testing as currently stated must prevail. Full compliance with Appendix E prior to fuel loading and low power testing is not required.

60. In view of the foregoing conclusion the Board finds that emergency planning for fuel loading and low power testing must be sufficient to confer the same level of protection to the public as afforded by full compliance with the regulations at full power operation.

(iii) Risks for Low Power Operation

61. The Applicant has proposed eight tests to be conducted on the Diablo Canyon reactors. None of the tests will exceed 5% of the rated power of the reactors. In actuality four of the tests would be conducted at approximately 3% power, two at about 1.5% power, and two at zero power levels (Tr. 10727). The proposed testing would last for no more than one month and in actuality would probably take about eighteen days. (Tr. 10726-10728).

62. Two witnesses, Dr. Brunot for the Applicant and Mr. Lauben for the Staff, testified as to the factors which result in reduced risk at low-power operation as compared to full power operation.

63. Dr. Brunot testified that the risk of exposure to radiation for any member of the public is directly proportional to the core inventory of the isotope or isotopes which could contribute to that exposure. During low-power testing the core inventory of fission products is a factor of from 20-400 less than it would be for full power operation. (Brunot, testimony following Tr. 10595, p. 11).

64. One consequence of reduced fission product inventory in the reactors is that the exposure which could occur at the site boundary and low population zone (LPZ) in the event of a release are proportionally lower than could occur at full power and are well within prescribed exposure limits. Dr. Brunot calculated potential

exposures at the site boundary and LPZ and compared them to limits set by regulation (10 CFR 100.11). These comparisons are shown in Table 2. (Dr. Brunot pointed out that numerous analyses have previously been made for full power operation and these show that Diablo Canyon would meet the exposure limits shown in Table 2 at full power).

Table 2

<u>Location</u>	<u>Period</u>	<u>Exposure Limit (REM)</u>	<u>Calculated Exposure (REM)</u>
Site Boundary: whole body	2 hours	25	1.25
	thyroid	300	15
LPZ: whole body	30 days	25	1.25
	thyroid	300	15

65. The calculated values in Table 2 are conservative (upper limits) because 1) only minimum reduction in fission product inventories were used to compute the exposures; 2) there are many other risk reduction factors at low power which reduce the risk more than the factor of 20 reduction used in the (Brunot, p. 12); and 3) the actual power profile for low power tests results in lower actual fission product generation than the profile used to calculate the values. (The values used for calculation were 5% power for a period of 1 month while actual values would range from 0 to 3% power for a period of about 18 days).

66. Dr. Brunot presented further detail on additional risk reduction factors associated with low-power testing. In addition to reduced fission product inventory these include:

- 1) Reduced decay heat after shutdown leading to risk reduction by a factor of 1-5;
- 2) Increased time available to take emergency actions leading to risk reduction by a factor of 5-10;
- 3) Reduced hydrogen production rate leading to risk reduction by a factor of 2-20;
- 4) Reduced risk of a spent fuel accident since there is no spent fuel in the facility. Dr. Brunot estimated a factor of 100 risk reduction as applied only to spent fuel accidents rather than a zero risk because after startup there is, of course, a small amount of spent fuel present;
- 5) Lack of activated corrosion products leading to risk reduction by a factor of 1-2;
- 6) Lack of radioactive inventory in waste systems leading to risk reduction by a factor of 20-500 for accidents involving leaks or ruptures in those systems;
- 7) Lack of radioactive inventory in steam generators and secondary systems leading to risk reduction in the range of 20 to 40 for accidents involving steam line breaks, feedwater system breaks, steam tube ruptures, and other secondary system accidents;
- 8) Few failures due to wearing out of pumps, valves, seals, and other components since they are in the early stages of their useful life, leading to risk reduction factors in the range of 1-2.

67. Dr. Brunot also considered factors which could lead to increased risk of accident during the testing period. The factors he considered were:

- 1) Break-in failures in which greater than normal outages would be expected because the testing will constitute the first challenge to systems and components;
- 2) Increase in risk due to the fact that some features of the emergency plan are not complete and;
- 3) Uncertainties in performance parameters for components and systems because final testing will still be done during the low power period. These items contributed to increases in risk by factors in the range of 1-5.

68. Dr. Brunot concluded from his analysis that 1) the factors tending to decrease risk are much greater than those tending to increase risk at low-power operation, and 2) the overall risk of events leading to accidental releases as well as the quantity of radioactive materials involved is greatly reduced. (Brunot testimony following Tr. 10595, pp. 6-9).

69. Dr. Brunot examined the risk to the public for a TMI equivalent - accident, taking into account the low population density in the vicinity of the plant. Estimated maximum and average (0-5 mile) individual radiation doses were 4 and 0.6 millirem respectively. These were compared to a background of 150 mrem/yr. and Environmental Protection Agency (EPA) protective action guides of 1000-5000 mrem. He also estimated population doses of 16 person rem (10-50 miles) and total radiation-induced cancer deaths of 0.008 as compared to natural cancer deaths in the population of 42,000. (Brunot Tables II and III). Dr Brunot stated that in comparing accidents emergency planning zones could be smaller for low-power testing than those required for full-power operation and achieve the same standard of protection of the public. This was based only on the reduced fission product inventory at low power. (The fission product inventory ranges from a factor of 20-400 lower than that at full power. The factor of 20 was used to reach conclusions on emergency planning zones).

70. Using documented tables of dose versus distance or air concentration versus distance he concluded that:

- 1) Any dose criteria which can be met at 10-30 miles for accidents at full power operation can be met at less than 6 miles (the LPZ distance) for the same accident at low power. (This encompasses the plume exposure planning zones of the State of California and the Federal government;
- 2) Any dose criteria which can be met in the 50 mile distance recommended for ingestion pathways at full power can be met in less than 10 miles at low power.

Furthermore, planning for ingestion pathways is in actuality not needed beyond the LPZ because the core inventory of long-lived isotopes is reduced up to 400-fold rather than by a factor of 20. (Brunot, Table I). Planning for iodine exposure through the milk pathway is not needed since no dairies exist within the LPZ. (Brunot, pp. 19-20).

- 3) At low power, exposures within the LPZ would not exceed any dose criteria for emergency planning which had been established for full power out to 30 miles.

71. Mr. G. Norman Lauben provided additional testimony on risk reduction of low-power testing as compared to full power operation. Mr. Lauben stated on cross-examination that his analysis was based on estimates of relative risk as contrasted with probabilistic risk analysis in which absolute probabilities of specific accident events are calculated using fault trees or event trees. In relative risk analysis only the change in risk which is associated with a change in operating mode (i.e. low power compared to full power operation) is calculated. Relative risk analysis is insensitive to possible errors in assessment of absolute risk and remains valid even if such errors exist. (Tr. 11100-11101).

72. Mr. Lauben testified that the NRC Staff has examined the risk of low-power testing in the Diablo Canyon SER Supplement 10 (NUREG-0675). The Staff found that there are three major factors which contribute to a substantial reduction in risk for low-power testing as compared to continuous full-power operation. First, there is additional time available

for the operators to correct the loss of important safety systems needed to mitigate relatively high risk events, or to take alternate courses of action. Secondly, there is reduction in risk associated with the significant postulated events during the low power testing program. Third, there is a reduction in required capacity of mitigating systems at low power. (Lauben testimony following Tr. 11014, p. 2).

73. Mr. Lauben testified further that the dominant events that could occur during low-power testing are: 1) small break LOCAs with loss of the emergency core cooling system (ECCS), 2) transients with total loss of feedwater, and 3) failure of double check valves between the reactor coolant system (high pressure) and the residual heat removal system (low pressure) which results in a LOCA (inter-system LOCA) outside containment, i.e. the interior of the reactor vessel communicates directly with the environment.

74. Mr. Lauben estimated the reduction in probability of occurrence for a number of postulated events. Modeling studies show that for small (4-inch cold leg break) LOCAs with loss of ECCS, boiloff would not begin for one hour and core uncovering would be delayed until about three hours at low power. Severe core damage would not begin until after 15 hours. The coolant flow required to dissipate decay heat at ten hours following a LOCA would be only eight gpm which is within the capacity of the centrifugal charging pump used for normal make-up operations. He concluded that the probability of a small LOCA resulting in excessive fuel damage and significant radiological release is reduced by a factor of 400-1600 for low-power operation as compared to full-power operation. (Lauben, p. 7).

75. Mr. Lauben also considered other transients including loss of feed water, steam line break, steam generator tube rupture, rod ejection and ATWS. Risk reduction associated with loss of feed water events is lower by a factor in the range of 1,000 to 20,000 for low power as compared to full power since it would take 2 1/2 days for the steam generators to boil dry, thus allowing time for corrective action. Risk reduction for other transients is similar and these transients do not become dominant at low power. The worst ATWS event is total loss of feed water followed by failure to scram. Complete boiloff would occur in 45 minutes. However, the operator could initiate boron injection to terminate the event. He would also have time to diagnose and correct failure to scram. This event has a probability of occurrence of  $10^{-7}$  per year and cannot be considered credible. Based on his review of the fuel load and low-power test program, which took into account reduced fission product inventories at low power and additional response time available to plant operators, Mr. Lauben stated that the reduction in risk is a factor of 400-1500 as compared to full power. If account is taken of the fact that the test program will be performed at a maximum of 4% power for 20 days (instead of 5% power for six months) an additional factor of 2 improvement is gained resulting in risk reduction estimates in the range of 400-3000.

76. Joint Intervenors and Governor Brown take issue with the "reduced risk" testimony of Dr. Brunot and Mr. Lauben. Both assert that for the purposes of emergency planning one must assume that a serious accident will occur and one must be prepared to respond. It is impermissible to treat emergency planning as of virtually no concern on the basis of "reduced risk".



77. The definition of risk contributes in part to this controversy as well as does the sometimes careless use of the term in testimony. Mr. Lauben defined "risk" (to the public) as the product of the probability of an event occurring and the consequences of that event. Thus risk reduction can occur if either the probability of an event or the consequences of an event is reduced or if, as considered by the witnesses both factors are reduced simultaneously during low power testing.

78. The definition of risk using a conceptual equation based on the definition ( $\text{Risk} = \text{Probability} \times \text{Consequences}$ ) clarifies how risk may be reduced and how the witnesses attempted to demonstrate reduction. Dr. Brunot's testimony showing reduced fission product inventory clearly relates to the reduction of consequences of release to the public simply because there is at least a 20-fold smaller inventory of fission products relative to full power. That portion of the testimony does not address probabilities of events. Nevertheless, risk is reduced from that factor alone. Other factors cited also appear to address predominantly the consequences of accidents due to lesser amounts of radioactivity present in the reactor at low power.

79. Mr. Lauben, on the other hand, emphasized a different approach. His testimony, while considering reduced fission-product inventory, explicitly addressed the probabilistic aspect of the risk definition. His estimate of reduced risk is based upon reduced probabilities of events occurring at low-power testing relative to full-power operation. In Mr. Lauben's approach, even if the consequences of a fission-product release were the same at low power as at full power, the risk to the public would be reduced by the amount of reduction in the probability of the events.

80. The testimony of the two witnesses combined, however, demonstrates that both terms of the risk equation diminish substantially at low power: the consequence term by a factor of at least 20 and the probabilistic term for transients by factors in the range of 400-1500.

81. Both witnesses admitted that their risk reduction and analyses involved engineering judgment on their part. This is evident in the ranges of probabilities of events cited which represent uncertainty in the estimates. The Board finds it unnecessary and perhaps impossible to reach a decision on the exact reduction in risk associated with low-power testing. All parties agree that risk is reduced. It is adequate for the purposes of emergency planning to conclude that the risk to the public is several hundred fold below that of full-power operation.

82. Both Joint Intervenors and Governor Brown find several flaws in the risk analysis actually performed. Mr. Lauben's risk reduction estimates are said to be overestimated because he compared 10-20 days of low-power operation with 30-40 years of full-power operation. Mr. Lauben made such a comparison in oral testimony and concluded that there was a 1,000,000-fold reduction in risk when so compared. However, his estimate of 400-1500 fold reduction is based on risk per unit time (5% power for six months). He stated that had he considered the actual power profile (3-4% power for 18 days) the risk reduction would be even greater. His estimates are therefore conservative and not inappropriate. The actual risk will be less than his estimate.

83. Both parties object to the use of relative risk assessment (i.e. the calculation of risk reduction relative to full power) on the basis that it is meaningless if the absolute risk of full power operation is not stated or estimated. Witnesses Brunot and Lauben did in fact rely on relative risk analysis in their testimony and neither attempted to estimate either the absolute risk of full power or the absolute risk of low-power operation. The weight of testimony from both witnesses was simply that low-power testing for a relatively few days is substantially less risky to the public than is full-power operation.

84. That conclusion, however, is not without meaning. First, safety analyses for full-power operation have been performed by both Applicant and Staff and the results have been published in a number of documents, including the PSAR, FSA, the environmental report, and the Staff FES and SER. (Brunot at 10). These analyses cover operation up to full power and therefore include risks of low power operation. Second, the absolute estimates, if they existed, would not be helpful to a decision in this case since risk estimates are an intermediate, not final, result. A license for full-power operation will be granted if full compliance with the regulations is demonstrated. A license for operation at less than full power can be granted with less than full compliance with the regulations governing emergency planning under 10 C.F.R. 50.47(c)(1). Relative risk estimates are therefore useful for the purpose of determining the relative degree of emergency planning which is needed to protect public health and safety at reduced power. We, therefore, do not find the relative risk methodology employed by applicant and staff inappropriate or fundamentally flawed. Governor Brown objected to Mr. Lauben's analyses, which appeared to be based on extrapolation of WASH-1400 methodology which had been

rejected by the Commission. Mr. Lauben further stated that WASH-1400 was used to identify dominant accident scenarios and not for numerical conclusions. Furthermore, Mr. Lauben explained that the staff had analyzed accident sequences to be sure that additional transients did not become dominant at low power. (Lauben, p. 8). Mr. Lauben stated further that current use of probabilistic analyses is based on development of the methodology which has taken place since WASH-1400 was published and this use is not "extrapolation" as suggested by Governor Brown. (Tr. 11104 and 11109).

85. Governor Brown presented an analysis of thyroid doses from hypothetical iodine-131 releases of 1% and 0.1% which could occur during low-power testing. His results show doses in excess of Part 100 limits. (Brown proposed findings 21-24, p. 79). The Governor did not disclose an accident sequence or any failure mechanism which might lead to such doses but instead simply postulated an immediate release to the environment. This is contrary to 10 C.F.R. 100.11, footnote 1, which states that an applicant should assume a fission product release no greater than that which would be expected from any accident considered credible.

86. The Board finds little merit in Governor Brown's analysis. Further, this analysis underscores the fallacy in Governor Brown's argument that emergency planning requires that the Staff and Applicant must simply postulate a serious accident to begin with. The Board disagrees. Reactor safety and emergency planning must be rational. To be so risk estimates must take account of safety features design, siting, containment, reasonable operator actions and credible accident sequences. To do otherwise would permit unbounded speculation as to the magnitude and

consequences of accidents. Furthermore, it does not follow from the above that taking rational account of safety features leads to "the absurd conclusion that no emergency preparedness is necessary even during full-power operation". (Brown proposed findings, p. 22). Neither staff nor applicant witnesses registered an intent to ignore emergency preparedness for low-power testing. The risk assessments serve to permit reasoned determination of emergency planning requirements which are needed to protect the public from radiation exposure at low power as compared to full-power operation.

(iv) The State of Emergency Planning at Diablo Canyon

87. Written testimony on emergency planning was prepared on behalf of the Applicant by J. D. Shiffer, W. B. Skidmore, W. B. Kaefer and R. Patterson. Mr. John R. Sears testified and submitted written testimony for the Staff. Three witnesses, Robert E. Paulus, Howard W. Mitchell and Jeffrey Jorgensen submitted written testimony and testified for Governor Brown. Joint Intervenors presented no witnesses but conducted active cross examination of Staff and Applicant experts.

88. Mr. Shiffer and his associates (PG&E Panel) described emergency planning for Diablo Canyon going back to 1974. A recent revision to the emergency plan, Revision 2, was submitted to the Staff in February 1980. This revision grew out of a post-TMI review by the NRC of all site emergency plans and, in the case of Diablo Canyon, included a site visit and a public meeting during the week of November 27, 1979. (Panel Testimony following Tr. 10604, p. 2). Additional information on emergency planning was submitted to the Staff in documents dated January 13, 1981 and February 27, 1981. (Sears Testimony following Tr. 11035, p. 2).

89. The additional information was reviewed by the Staff for conformance to the criteria of the 16 planning standards of 10 CFR 50.47. It was also evaluated against the requirements of section III.A.1.1 and III.A.1.2 of NUREG-0694 which was later superseded by NUREG-0737. The Staff's evaluation and conclusions are reported in

Appendix B, "Emergency Preparedness Evaluation Report," to Supplement No. 14 to the Safety Evaluation Report. (NRC Staff Exhibit 25).

90. The Staff found deficiencies in the plan which it required to be corrected prior to full-power operation. The principal deficiency is that the fast alerting system has not been installed, although PG&E has purchased sirens and now awaits local permits before installation can begin. (Sears Testimony following Tr. 11035, pp. 3-4). A second deficiency of significance is that the public information system has not yet been implemented. (Sears, p. 4). There are other deficiencies in the plan which PG&E has documented in Joint Intervenor's Exhibit 111. The Applicant has committed to correct all deficiencies prior to full-power operation. (Tr. 10660).

91. Mr. Sears testified that the fast alert system was not significant for low-power testing because it is designed to give notice within 15 minutes of situations in which offsite radiation release might occur in less than 30 minutes. At low power, release of radioactive material during a LOCA would not take place for at least 15 hours and a fast alert system would not be needed. Since the public information system is only needed to inform the public on the fast alerting system it also would not be needed until the fast alert system was installed. (Sears, p.4).

92. The PG&E panel testified that public notification on emergency procedures to be in effect during low-power testing would be issued as

soon as it was determined whether the fast alert system could be installed prior to fuel load. (Tr. 10800).

93. PG&E is now preparing revision 3 to the site emergency plan. This will address all remaining criteria of NUREG-0654 as they relate to full-power operation. The State of California and San Luis Obispo County are also revising their nuclear emergency plans to meet the requirements of NUREG-0654. (PG&E Panel, p. 3).

(v) Applicant's Emergency Preparedness

94. The PG&E Panel provided detailed evidence on the applicant's emergency preparedness in their prepared testimony. (PG&E Panel, p. 1-42.)

95. The onsite organization for dealing with emergencies is headed by a Site Emergency Coordinator. He has specific assigned responsibilities which include assessment, corrective, and protective actions to be taken by company personnel prior to activation of the Corporate Emergency Response Plan. This position is initially assumed by the shift foreman. Later in an emergency the position will be assumed by a senior member of the plant staff such as the plant manager. However, command of the control room will remain with the shift foreman or other senior reactor operator. The site has a reservoir of personnel, many of whom are graduate engineers, to deal with emergencies. At a minimum there will be two Westinghouse engineers and three PG&E engineers on each shift in addition to the normal shift crew during fuel loading and low-power testing. Key corporate officials will be deployed to the offsite emergency operations



facility to coordinate and direct the overall company response in the event of an emergency.

96. The company has established 1) an Onsite Technical Support Center (TSC), 2) an Onsite Operation Support Center (OSC), 3) an Offsite Emergency Operations Facility (EOF), and 4) a Corporate Incident Response Center (CIRC) in San Francisco.

97. The permanent TSC is completed and will be operational prior to fuel loading. The witnesses described the facility with respect to seismic design, space accommodations, ventilation systems, lighting equipment, computer monitoring of plant parameters, closed-circuit TV monitoring of the control room and a radiological counting laboratory. The staff reviewed the TSC in SER Sup. 10 (Staff Exhibit 21) and concluded that it had reasonable assurance the facility would meet its requirements.

98. The OSC has been established in the existing plant security building. The OSC is provided with communication facilities, radiological monitoring equipment, emergency kits, and evacuation kits. (Tr. 10676). It serves as a staging area for personnel during an emergency. The Staff review in SER Sup. 10 concludes that the facility meets NRC requirements.

99. The EOF is an interim facility consisting of a trailer located adjacent to the San Luis Obispo County Sheriff's Operations Center about 11 miles northeast of the site. It provides for management of the overall company response to an emergency. The

interim facility has been approved by NRC for fuel loading and low-power testing.

100. No direct evidence was presented by opposing parties showing that the TSC, OSC or EOF did not meet NRC regulations or requirements for low-power testing.

101. The PG&E Panel described the onsite emergency communications system. Telephone communication consists of three normal business telephone lines, four unlisted telephone lines and a recently installed computer branch exchange (CBX) direct dial system. The CBX system has a number of ties throughout the plant to provide independent pathways. Special features include one-way trunks from the plant to the company's San Francisco offices and limited-access trunks to insure availability and executive override features on high priority phones. Dedicated phones link the control room to NRC, the State Office of Emergency Services, and the County Emergency Operations Center.

102. Radio communication systems were also described which provide for short range (onsite) and long range communications to several offsite locations and communication with mobile units. A second radio system for health physics use was described. This system is used in the field by mobile units and utilizes mountain top radio sites for extended coverage. A third radio system has been provided for plant security.

103. The post-LOCA radiological monitoring program consists of 32 sampling stations (15 onsite and 17 offsite). All stations have

thermoluminescent dosimeters (TLD's) and 6 have air sampling equipment (3 onsite and 3 offsite). Two "real time" instruments (instruments which give an immediate reading of dose rate) are installed offsite and 9 others are awaiting installation (2 onsite and 7 offsite). The offsite monitoring stations are arranged in a ring around the plant beyond the LPZ. (Applicant Exhibits 66, 67, 68, 69). The real-time instruments will initially be read at their field location but later they will transmit data to a central computer. County as well as Company personnel will be able to read these instruments at their field location.

104. Additional monitoring capability is provided by a mobile van which is equipped with special sampling and nuclear measurement systems. Instrumentation in the van can be used to analyze air, water, milk, food and other materials for radioactivity. The van has been delivered and testing is near completion. Training is being conducted for both company and County Health Department Personnel. A meteorological tower and computer is in operation to provide real-time atmospheric dilution factors to a downwind distance of 50 Kilometers.

105. An interim post-LOCA sampling system is being installed at the plant and will be operational prior to fuel load. It is designed to collect radioactive samples from plant process streams without exposing workers. The system provides for remote sample collection and manipulation. Both radiological and chemical analyses can be performed

on samples. This system will be replaced by an improved permanent system in July of this year.

106. Diablo Canyon has first aid and decontamination areas for handling minor injuries. It also has several local physicians on its panel and medical facilities on its panel for handling industrial injuries. Arrangements with the San Luis Obispo ambulance service and French Hospital have been made for transport and treatment of seriously injured contaminated persons. The hospital has facilities and procedures for treating contaminated persons. Ten members of the hospital staff have received training in handling of radiation accidents by emergency personnel given at Oak Ridge, Tennessee. Additional training has been conducted at the French Hospital by the company radiological medical consultant. Drills for transport and treatment of simulated accidents victims were conducted at the hospital in 1977, 1979, and 1980. Backup medical support at St. Francis Memorial Hospital in San Francisco exists through agreements in existence since 1979.

107. The public warning system now consists of warning by house-to-house contact and loudspeaker equipped vehicles. Emergency instructions will be broadcast by an Emergency Broadcast System (KVEC in San Luis Obispo). This warning system will be in effect until it can be replaced by some 85 radio controlled sirens which will be located throughout the State of California Emergency Planning Zone. The sirens are available for installation but all permits for

installation have not been obtained. The system could be functional by August 1981 if the permits are obtained.

108. Fire brigades formed from plant operating personnel provide self sufficiency in the ability to fight fires. Members of the shift crew form one brigade and there are two others made up of maintenance personnel. Training sessions for brigade members are held monthly and fire drills are held quarterly. Sixty personnel were given experience in fighting oil, gasoline and simulated electrical fires in a special program held in January 1981. The plant is equipped with automatic sprinkler systems, hose reel systems, CO<sub>2</sub> systems, a halon system and portable fire extinguishers.

109. The California Department of Forestry is expected to provide backup fire protection. Their assistance is needed for fighting brush fires onsite. They are not the primary fire-fighting group for in-plant fires; however, their assistance would be requested for any fire which could not be controlled within 10 minutes by plant fire brigades.

110. The California Department of Forestry (CDF) rescinded its agreement to fight fires at Diablo Canyon in a letter dated April 20, 1981. Mr. Robert E. Paulus, Deputy Director of the California Department of Forestry for Fire Protection and Technical Services testified on this matter for Governor Brown. The agreement was rescinded because inadequate equipment and inadequate training existed to enable CDF personnel to fight fires at Diablo Canyon. (Paulus

Testimony following Tr. 10895, p. 2, and Joint Intervenors' Exhibit No. 116).

111. On cross examination Mr. Paulus stated that his concern for inadequate equipment (primarily radiological monitoring equipment and self-contained breathing apparatus) was now resolved. (Tr. 10937). His concerns about CDF personnel training were also resolved because a radiation training course for 60 CDF employees then being conducted would meet their needs. (Tr. 10906). All that remains to satisfy CDF concerns is to complete review and testing of a pre-fire plan. Mr. Paulus estimated that this could be done by early July. Upon completion of those items a new agreement between PG&E and CDF would be executed. (Tr. 10909).

112. The PG&E panel described a number of drills and training exercises conducted by the company. These have involved both site and county personnel and included tests of ability to transport an accident victim to the hospital, mobilization of site personnel, evacuation of site personnel, field monitoring, radio communication and coordination with county personnel.

113. A full scale exercise of company, State and local emergency plans is planned for August 1981.

114. The PG&E panel presented a detailed description of their methods for determining the size of the emergency planning zone for plume exposure pathway. The method is based on a mathematical dilution model for radioactive releases to the atmosphere. Based on the fact

that the core inventory of radionuclides is reduced by a factor of 20 at low power it was calculated that the size of the plume emergency planning zone would be reduced by a factor of about 10 relative to full power. Thus a dose that would occur for a given release at full power out to 10 miles would occur at 1 mile for low power. Doses to thyroid or whole body at the site boundary (800 meters) for all analyzed accidents are computed to be below exposure criteria contained in the 1978 State of California Emergency Response Plan. Doses at the boundary of the LPZ (6 miles) would be well below the exposure criteria. The panel concluded that it is extremely unlikely that offsite protective action would ever be required beyond the LPZ due to an accident at low power. (PG&E Panel p. 35-37). In oral testimony Mr. Schiffer stated that the LPZ is in fact the zone being used by the company for emergency planning at low power. (Tr. 10838).

(vi) County Emergency Plans

115. The Panel testified that San Luis Obispo County Emergency Plans provide for evacuation of the LPZ in the event of an emergency. There are approximately 65 permanent residents of the LPZ. In addition there may be up to 1500 visitors to Montana de Oro State Park which is in the northern portion of the LPZ. (PGandE Panel p. 38-39).

116. The Sheriff of San Luis Obispo County has the lead role in conducting an evacuation of the LPZ. He has the authority to order an evacuation based on a recommendation of the Plant Emergency Coordinator and he has the responsibility to conduct the evacuation. He would use

a house-to-house notification for residents of the LPZ. This could be completed in several hours. (Tr. 10839-10841).

117. Evacuation of the State Park would be coordinated with State Park personnel. Persons in remote sections of the park can be notified by personnel on foot or using horses. (San Luis Obispo County Nuclear Power Plant Emergency Evacuation Plan, 1976, p. 35). Mr. Sears also testified that the Sheriff has an agreement with Hunter Liggett Air Force Base for use of a helicopter which, when equipped with bullhorns could be used to warn persons in the park. The helicopter can fly in adverse weather. (Tr. 11068).

118. Sheriff Whiting of San Luis Obispo County testified that his department has an emergency plan for evacuation of the LPZ and he believes it can be executed. (Tr. 11323, 11337). The plan was admitted as Board exhibit number 5. (Tr. 11328).

119. The Board has examined the plan entitled Standard Operating Procedures for Nuclear Power Plant Emergency Response (San Luis Obispo County Sheriff's Department, dated March 1977). It contains descriptions of agency responsibilities, an organization chart, the Sheriff's personnel assignments, alerting procedures, departmental functions, coordination with other agencies, and details of available manpower, materials and equipment, and supporting systems. Instructions for activating and terminating emergency response are contained. Numerous attachments provide additional check lists, procedures, resident lists (deleted from the plan submitted to the



Board, Tr. 11331),<sup>2/</sup> agency notification lists and evacuation maps. The plan gives this Board reasonable assurance that the Sheriff has the authority and capability to carry out an evacuation of the LPZ in the event of a radiological emergency.

120. The Staff has requested PG&E to address protective action and implementation during an earthquake in the revised site plan for full-power operation. FEMA has made a similar request covering areas around the site as part of their review of State and Local emergency plans for full power. (SER Sup. 14, Staff Exhibit 25). This plan has not been requested for low-power testing. Mr. Sears testified that PG&E has committed to provide the requested analyses. A contractor report was due in mid-May but had not yet been provided to the parties. The applicant will revise the emergency plan to include the contractor's recommendations. (Sears, p. 7).

121. Mr. Jeffrey Jorgensen, a member of the County Board of Supervisors, testified for Governor Brown that the County Emergency Response Plan is deficient in a number of ways. His objection is based on a view that although the County Board adopted a plan in 1976 it has never been implemented and that it is essentially a paper plan. (Tr. 10917). His affidavit lists a number of items in the current plan

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<sup>2/</sup> We note that the list of residents in the LPZ and their home numbers need to be updated prior to low-power testing. (Tr. 11337).

which are in his view inadequate. These include deficiencies in training of county personnel, communications and equipment, lack of emergency exercises and public information program and inadequate medical preparedness. (Jorgensen affidavit following Tr. 10901, p. 2).

122. On direct examination Mr. Jorgensen stated that after TMI the county had put no effort into its 1976 plan to upgrade it but had decided to await the development of new regulations and then use its resources to develop a new plan. The county has hired a consultant to develop the new plan which will not be adopted till December 1981. (Tr. 10918-10921). A draft administrative plan was available on May 1, 1981. (Tr. 10976).

123. Mr. Jorgensen's concerns were primarily for the status of county-wide planning and he stated he was unfamiliar with the Sheriff's specific implementing plan for the LPZ. (Tr. 10973).

124. The Board finds little reason to doubt that the 1976 county emergency plans might be found defective for full-power operation by current standards. Mr. Jorgensen's past efforts to persuade the county to improve its plans appear to the Board to be well founded in view of the development of post-TMI regulations and guidance previously discussed in this decision. Without comment on the likely adequacy of the plans under current development it appears to the Board that undertaking that development is a reasonable response to the promulgation of new regulations. Mr. Jorgensen's testimony, however,

does not specifically address defects in planning related to low-power testing nor does it take into account testimony about the Sheriff's plan, the justification for the designation of reduced planning zones or the overall reduced risks associated with low-power testing.

125. Dr. Howard Mitchell, who is Health Officer of San Luis Obispo County, testified as a witness for Governor Brown. Dr. Mitchell is concerned that the county does not have adequate radiological monitoring equipment or communication equipment and that the County Health Office is inadequately staffed to respond to an emergency at Diablo Canyon. He is also concerned that the county has inadequate medical facilities for treatment of persons injured in a radiological emergency and that the county has never attempted to evacuate persons from the LPZ. (Mitchell affidavit following Tr. 10898, p. 1-2).

126. Dr. Mitchell testified that he was pleased with the PG&E radiological monitoring equipment and its training of county employees. However, he has inadequate monitoring equipment for use by his department. (Tr. 10910). He also does not have communications equipment for his staff although he agrees that the PG&E mobile van has excellent communications equipment. His staff is being trained in use of the mobile van. (Tr. 10958-10961).

127. Dr. Mitchell expressed a concern for the ability to evacuate bedfast persons by ambulance; however, he stated that there were no such persons in the LPZ. Within one mile beyond the LPZ there are about 25 such persons. (Tr. 10964).

128. Dr. Mitchell's remaining concerns are that he would like more hospital facilities and physicians, more staff and more ambulances for handling of emergencies. (Tr. 10910, 10912). He did not provide any additional data on these perceived needs relative to low-power testing.

129. The Board does not doubt that the County Health Department could productively use more monitoring and communications equipment than it has in the event of an emergency. Dr. Mitchell's concerns as a responsible health officer not only for equipment but also for health care facilities is understandable. His testimony, however, provides no additional factual information related to low-power testing. It does not take account of reduced risk, reduced consequences of release, the small population within the LPZ or the small size of the emergency planning zone for low-power testing.

(vii) Conclusions on the Adequacy of Emergency Planning

130. From the testimony and evidence presented in this case, the Board finds that the risks from fuel load and low-power testing are considerably reduced from that of full-power operation of the Diablo Canyon reactors. This risk reduction is based upon several factors which include a lower fission-product inventory, a greater amount of time for operator response to mitigate and/or terminate an accident condition, and a reduced likelihood of the occurrence of serious sequences leading to radiological release.

131. These factors reduce the size of the area which might be affected by a radiological emergency and for which emergency planning

measures must be taken and the level of emergency response preparedness which would have to be in place. The choice of the six-mile LPZ as the basic area around the plant for emergency planning is justified and reasonable because of the reduced risk.

132. The Board finds that the current level of emergency planning on the part of the Applicant and the county provides substantial radiological protection to the public which is at least equivalent to the protection which would be afforded by full compliance with emergency planning regulations at full power operation. These plans are sufficient to respond effectively to any radiological emergency which might reasonably be expected to occur during low-power testing.

133. The Board also finds that the current level of emergency preparedness is consistent with NRC requirements as set forth in 10 CFR 50.47 and NUREG-0737 as recently changed by the Commission on April 22, 1981 in SECY 81-188. The deficiencies in the PG&E, local and state plans are not significant for operation of Diablo Canyon at power levels not to exceed 5 percent of full power.

(2) Relief, Safety and Block Valves

Contention 24 reads:

Reactor coolant system relief and safety valves form part of the reactor coolant system pressure boundary. Appropriate qualification testing has not been done to verify the capabilities of these valves to function during normal, transient and accident conditions. In the absence of such testing and verification, compliance with GDC 1, 14, 15, and 30 cannot be found and public health and safety are endangered.

(i) Discussion

134. The Board accepted this contention in its prehearing conference order of February 13, 1981 only to the extent it addressed the issue of when the testing of the block valves must be completed. In the Board's April 30, 1981 Memorandum and Order (Granting PG&E's and NRC Staff Motions for Summary Disposition of Joint Intervenors' Contentions 5 and 13; Denying their motions as to Contentions 4 and 24), the Board put the parties on notice that it was not appropriate in this proceeding to go beyond the Contention to attack the Electric Power Research Institute (EPRI) testing program itself. The Board did indicate that the significance of some reputed block valve failures experienced during EPRI testing might be addressed by the parties.

135. Candee L. Gottshall, Richard A. Muench, John L. Carey and Thomas E. Auble presented testimony on this contention on behalf of PGandE. Frank C. Cherny presented testimony on behalf of the NRC Staff. Joint Intervenors and Governor Brown did not present any direct testimony on this contention.

136. In Diablo Canyon's reactor coolant systems the pressurizer of each unit is equipped with three Masoneilan 20,000 Series (2NPS) power operated relief valves (PORVs), three Crosby HB-BP-86 (6M6) safety valves and three Velan #B10-30548013M block valves. (Cherny Testimony following Tr. 11216, p. 10 and Muench-Gottshall Testimony following Tr. 11157, pp. 1, 3 and 5).

137. The PORVs are designed to be the first valves to respond to relieve steam to limit the maximum pressure in the reactor coolant system during full-load rejection transients without reactor trip. The PORVs are the first valves to respond because the set point for the PORVs is lower than the set point for the safety valves. Under normal conditions, the PORVs remain closed. (Muench-Gottshall Testimony following Tr. 11157, p. 3 and Tr. 11174). The safety valves also remain closed under normal operating conditions. If the PORVs function as designed, the safety valves will not open. However, if the safety valves were required the capacity of two safety valves is sufficient to mitigate system overpressure; the capacity of the third safety valve provides redundancy. (Id., p. 1). Upstream of the PORVs are the block valves which are provided to isolate the inlets of the PORVs for maintenance and testing.<sup>3/</sup> (Id., p. 5).

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<sup>3/</sup> Although the Board finds no explicit statement to this effect in the record it is implicit in the test program requirements that the PORV block valves must also be capable of isolating a PORV which fails to close after relief of a pressure transient.

138. Candee L. Gottshall and Richard A. Muench from Westinghouse Electric Corp. testified on the reliability of the original design and testing of safety valves, relief valves and block valves for Diablo Canyon. The three types of valves were designed in accordance with USAS-B16.5-1968, Steel Pipe Flanges and Flange Fittings. (Id., p. 2, 4 and 6). In the case of the safety valves, they were also designed to meet the requirements of the ASME Boiler and Pressure Vessel Code, Section III. (Id., p. 1-2). Additionally, the safety valves, relief valves and block valves were qualified to withstand seismic loadings equivalent to 3.0g in the horizontal direction and 2.0g in the vertical direction and to withstand loading due to the Hosgri seismic event accelerations in addition to normal operating and deadweight loads. Prior to shipment to the Diablo Canyon plant, the three types of valves successfully completed liquid penetrant inspection and a hydrostatic test. (Id., p. 2, 4 and 6). Safety valves of the same design as Diablo Canyon were successfully pressure tested at Pacific Gas and Electric's Contra Costa plant in a configuration that was representative of the actual Diablo Canyon plant configuration. (Id., p. 2). After the relief valves were installed at Diablo Canyon, the relief valves were successfully tested during hot functional testing. (Id., p. 5).

139. NRC Staff witness Frank Cherny presented testimony on the safety standards for the PORVs, safety valves and block valves. PORVs and safety valves must comply with General Design Criteria 1, 14, 15 and 30. In reviewing for compliance with the criteria, the NRC Staff used the following standards: (a) Standard Review Plan (SRP) 3.9.2



"Dynamic Testing and Analyses of Systems, Components, and Equipment;" (b) SRP 3.9.3 "ASME Code Class 1, 2 and 3 Components, Component Supports, and Core Support Structures;" (c) Regulatory Guide 1.48 "Design Limits and Loading Combinations for Seismic Category 1 Fluid Systems Components;" and (d) Regulatory Guide 1.68 "Pre-operational and Initial Startup Test Programs for Water-Cooled Power Reactors." (Cherny Testimony following Tr. 11216, p. 3). The NRC Staff has found that the Applicant has demonstrated compliance with GDC 1, 14, 15 and 30 except for qualifying the PORV and safety valves with respect to loadings which result from transition flow from steam to water or solid fluid flow. (Id., p. 6 and 7).

140. In response to the requirements in Item II.D.1 of NUREG-0737, a test program to cover loadings which result from transition flow from steam to water and solid fluid flow for PORV and safety valves has been developed by the EPRI and was submitted to the NRC on December 17, 1979. A revised version with modifications was submitted on July 8, 1980. (Id., p. 6 and Carey-Auble Testimony following Tr. 11159, p. 1 and 2).

141. John J. Carey, of EPRI, and Thomas E. Auble, on loan to EPRI from Westinghouse, participated in developing the EPRI test program. They explained the status of the on-going testing. A Masonellan Model No. 20,000 PORV and a Crosby HB-BP-86 (6M6) safety valve which are representative of the PORVs and safety valves at Diablo Canyon were selected for testing. (Carey-Auble Testimony following Tr. 11159, p. 3 and 4). The test conditions for these valves include steam, subcooled water, water seal, and steam to water transition discharge conditions.

(Id., p. 4). EPRI testing has not been fully completed on the PORVs and safety valves. However, the PORVs have successfully passed the steam tests that have been performed. (Id., p. 6). The remainder of the test program for the PORVs and the safety valves at Diablo Canyon is presently scheduled to be completed by July 1, 1981. (Id., p. 2 and 3).

142. The EPRI panel noted that, although not part of the EPRI test program scope, seven PORV block valves were preliminarily steam tested. Among those seven valves was the block valve type and model used in the Diablo Canyon Plant. (Id., p. 7). Although three of the various models of block valves which were tested failed to fully close, those models are not utilized as block valves in the Diablo Canyon Nuclear Power Plant. The Diablo Canyon block valve models successfully completed the preliminary test. (Id., p. 7 and 8). At the present time it is not clear what, if any, additional block valve testing will be required to meet Item II.D.1 of NUREG-0737. Although the block valve testing to date has not been under water and transition flow conditions, Mr. Cherny noted that it is possible that the testing completed to date on block valves may envelope the conditions of concern. (Cherny testimony following Tr. 11216, p. 12-13, Tr. 11236, 37).

143. The testimony in this proceeding indicated the Staff's belief that the EPRI program, upon proper documentation, will meet the requirements of NUREG-0737 as it addressed relief and safety valve testing. (Cherny Testimony following Tr. 11216, p. 6). In the event there is a failure of either the relief or safety valves during the remainder of the EPRI program, the necessary corrective actions will be ordered by the NRC. (Id., p. 6).

144. NRC Staff witness Norman Lauben, who testified on the low risk associated with low-power operation, also pointed out that the safety significance of block valve failure during low power is negligible. This is due to the fact that if the relief valves are not challenged the block valve position has no significance. The only condition causing such a challenge are transients involving loss of feedwater which are not of particular concern at low power. Even if both the relief valve and block valve stuck open, this would only amount to a small loss-of-coolant accident (LOCA) which is not a significant concern at low power. In fact, it would be a smaller LOCA than the one used in the analysis of risk reduction for small break LOCAs discussed previously in Lauben's testimony (Lauben Testimony following Tr. 11014, p. 9, 10).

145. Westinghouse has performed analyses of postulated LOCAs in the pressurizer vapor space for a plant substantially identical to the Diablo Canyon Plant. These analyses were performed for 100% power level. (Gottshall-Muench Testimony following Tr. 11157, p. 7; Tr. 11189-11191). The analyses assumed that the three PORVs stuck completely open and that the block valves failed to close. Similar analyses enveloped the extremely unlikely case that the three pressurizer safety valves were stuck completely open. In all instances, no core uncover was predicted to occur (Id., pp. 7, 8; Tr. 11189-11191). In short, even if all three of each type of valve were postulated to fail completely open the public health and safety would not be endangered.

Thus, according to the witness completion of additional testing of safety valves, PORVs, and block valves is not required prior to fuel load, low power testing, or full power operation at Diablo Canyon (Id., p. 8; Cherny Testimony following Tr. 11216, pp. 13, 14).

146. Westinghouse has conducted a survey of Westinghouse-designed operating plants in the United States. This survey covered plants with a total of 181 reactor years of operation through October 1980, and included valves of the type used at Diablo Canyon. No instances of failure of safety, PORV, or block valves were reported by the owners of these plants and none has been reported since the time of the survey. (Id., pp. 3, 5, 6; Tr. 11189).<sup>4/</sup>

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<sup>4/</sup> There has been one instance of a PORV valve failure to close in a foreign plant which was associated with the failure of a yoke. The yoke which failed is not the same as those used at Diablo Canyon and has no bearing on the Diablo valves. (Tr. 11185, 11189, 11212).

(ii) Conclusion

147. The Licensing Board, in their prehearing conference order of February 13, 1981, admitted the contention on valves only to the extent that the Joint Intervenors and Governor Brown wished to argue that the testing program must be completed prior to fuel load. This interpretation of the contention was reinforced by the Licensing Board in their Memorandum and Order of April 30, 1981 which denied Summary Disposition of the valve contention. In that order, however, the Board did express some concern over the significance of the failure of three block valves during the EPRI testing program.

148. Under NUREG-0737, Subsection II.D.1, the testing of relief and safety valves must be completed by July 1, 1981 and testing of block valves must be completed by July 1, 1982. Joint Intervenors essentially argue that all the testing programs must be completed prior to fuel load and low-power testing of the Diablo Canyon Nuclear Power Plant.

149. As discussed above, the testing of relief and safety valves will be completed by July 1, 1981, which will predate the fuel load at Diablo Canyon. Thus, the only remaining issue under Contention 24 is whether the block valve testing should also predate fuel loading. The evidence discussed above presents no basis for requiring a testing program be conducted for block valves other than on the schedule provided in NUREG-0737.

150. The reliability of the relief and safety valves, demonstrated through design and testing, and which will be supplemented

by further testing prior to July 1, 1981, demonstrates there is little risk of their failure, resulting in a challenge to the block valves, during low power testing.

151. The test in which three block valves failed only serves to reinforce the lack of necessity of altering NUREG-0737 compliance dates. Not only were the three valves which failed not of the type used at Diablo Canyon, but the block valve which will be used at Diablo Canyon passed those tests. In addition, it is possible the testing of the block valves which has already taken place envelopes the conditions of concern and no further testing will be required.

152. Finally, the consequence of failure of the block valve during low-power testing was shown to be a manageable event in terms of both reaction time and consequences.

153. In sum, the totality of evidence presented failed to show any urgency requiring the Licensing Board to change the requirements of NUREG-0737. Accordingly, after considering all of the evidence above in evaluating the reliability of the Diablo Canyon reactor coolant system valves for low-power operation, and in particular the following factors: the design of the valves, factor testing, seismic qualification, postulated valve failure, compliance with GDC 1, 14, 15 and 30, the safety and relief valves qualification by the EPRI test program prior to fuel load, and the safety significance of the block valve during low-power operation, the Board concludes that fuel loading and low-power testing can commence at Diablo Canyon with no adverse effect on the health and safety of the public, prior to any additional testing of the block valves.

III. CONCLUSIONS OF LAW

154. The Board has considered all the documentary and oral evidence produced by the parties. Based upon our review of the entire record in this proceeding and upon the foregoing findings of fact, the Board concludes, in all respects except resolution of the security issue, as explained in paragraph 11 of this decision, as follows:

(a) Construction of the facility has been substantially completed in conformity with the construction permit and the application as amended, the provisions of the Atomic Energy Act of 1954, as amended, and the rules and regulations of the Commission; and

(b) The facility will operate in conformity with the application as amended, the provisions of the Act, and the rules and regulations of the Commission; and

(c) There is reasonable assurance (i) that the activities authorized by the fuel load and low-power testing (up to 5%) license can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations; and

(d) PGandE is technically and financially qualified to engage in the activities authorized by the fuel load and low-power testing license in accordance with the Commission's regulations; and

(e) The applicable provisions of 10 CFR Part 140 will be satisfied prior to fuel load; and

(f) The issuance of a fuel load and low-power testing license will not be inimical to the common defense and security or to the health and safety of the public.

IV. ORDER

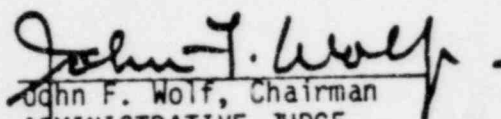
155. WHEREFORE, IT IS ORDERED in accordance with the Atomic Energy Act of 1954, as amended, and the Commission's regulations, and based on the findings and conclusions set forth herein, that the Director of Nuclear Reactor Regulation is authorized to issue a license, consistent with the terms of the Partial Initial Decision, to authorize fuel load and low power testing up to 5% of rated power generally in the form submitted by PGandE in support of the motion.

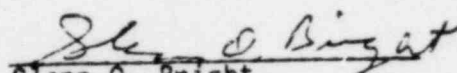
156. IT IS FURTHER ORDERED, in accordance with Sections 2.760, 2.762, 2.764, 2.785 and 2.786 of the Commission's Rules of Practice, that this Partial Initial Decision shall not become effective until 10 days from the date this decision is transmitted to the Commission and shall constitute the final action of the Commission subject to review thereof under the above-cited rules. Exceptions to this Partial Initial Decision may be filed by any party within 10 days after the service of this Partial Initial Decision. A brief in support of the exceptions shall be filed within 30 days thereafter (40 days in the case of the staff). Within 30 days after the service of this brief of the

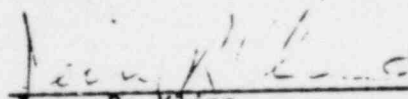


appellant (40 days in the case of the staff), any other party may file a brief in support of, or in opposition to, the exceptions.

FOR THE ATOMIC SAFETY  
AND LICENSING BOARD

  
John F. Wolf, Chairman  
ADMINISTRATIVE JUDGE

  
Glenn O. Bright  
ADMINISTRATIVE JUDGE

  
Jerry R. Kline  
ADMINISTRATIVE JUDGE

Dated at Bethesda, Maryland  
this 17th day of July 1981.

APPENDIX A

<u>Exhibit No.</u>	<u>PGandE</u>	<u>In Evidence</u>
66	View Graph - On Site Monitoring Stations	10772
67	View Graph - Off Site Monitoring Stations	10772
68	View Graph - Real Time Instruments on Site	10772
69	View Graph - Real Time Instruments Off Site	10772
<u>Exhibit No.</u>	<u>Joint Intervenors</u>	<u>In Evidence</u>
111	PGandE Supplemental Answers to J.I. Interrogatories 9A, 11A	10619
112	FES pp. 7-1 through 7-7	
113	Proposed forms of low power licenses for Units 1 and 2	
114A	Kemeny Com. Report § "Overview"	
114B	Kemeny Com. Report § "Commission Findings and Recommendations"	
115	Rogovin Com. Report pp. 147 through 152	
116	Misc. Agreements with State and Local Agencies	
117	Letter R.L. Tedesc. to M.H. Furbush 12/16/80	11059
118	Risk Assessment Review Group Report pp. viii through x	11107

<u>Exhibit No.</u>	<u>Governor Brown</u>	<u>In Evidence</u>
1	Memo - J.W. Macy to J.W. McConnell 3/12/80	11078
2	Letter and Report entitled "EPRI PWR Safety and Relief Valve Test Program"	
3	FEMA-NRC Memo of Understanding 1/11/80	11276
4	Letter to Harold Denton from John McConnell dated February 14, 1980	11276
5	Letter from Harold Denton to John McConnell dated February 14, 1980	11276
6	Letter to Harold Denton from John McConnell dated March 12, 1980	11276

<u>Exhibit No.</u>	<u>NRC Staff</u>	<u>In Evidence</u>
18	SER Supp. 7	11050
19	SER Supp. 8	11050
20	SER Supp. 9	11050
21	SER Supp. 10	11050
22	SER Supp. 11	11050
23	SER Supp. 12	11050
24	SER Supp. 13	11050
25	SER Supp. 14	11050

<u>Exhibit No.</u>	<u>ASLB</u>	<u>In Evidence</u>
5	Sheriff's LPZ Evacuation Plan entitled "Standard Operating Procedures for the Nuclear Power Plant Emergency Response	11329

In addition, the Board took official notice of a document entitled "SECY-81-188-Emergency Preparedness" transmitted from S.J. Chilk to William Dircks, dated April 22, 1981 (Tr. 10649), the report of the Kemeny Commission (Exhibits 114A and B) (Tr. 10595), and the Rogovin Report (Exhibit 115) (Tr. 10648).