

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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

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In the Matter of:

PACIFIC GAS AND ELECTRIC COMPANY
(Diablo Canyon Nuclear Power Plant,
Units 1 and 2)

Docket Nos. 50-275 OL
50-323 OL

August 31, 1982

INITIAL DECISION

Appearances

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For the State:

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For the Intervenors:

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For the Nuclear Regulatory Commission Staff:

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I. OVERVIEW

A. Nature of the Proceeding

This proceeding results from an application by Pacific Gas and Electric Company for an operating license for its Diablo Canyon Nuclear Power Plant, Units 1 and 2. The granting of the operating license is contested by the Joint Intervenors and Governor Brown.

The original hearing Board in this case was established on November 24, 1967. Pacific Gas and Electric Company (Applicant) applied for authorization to construct and operate a nuclear power plant on July 15, 1968. A provisional construction permit was issued on December 9, 1970. The Applicant filed for an operating license on October 10, 1973.

Hearings on Applicant's environmental plan and preliminary issues in the operating proceedings, as they became ripe for trial, were held in 1974 and 1975. Following intermittent hearings on the Applicant's environmental plan and on the operating application a partial initial decision^{1/} was rendered on the environmental plan in 1978.

^{1/} 7 NRC 989 (1978).

A partial initial decision^{2/} was issued in 1979 in the operating license proceeding. It included non-"TMI issues" such as the risk from aircraft and missile operations in the vicinity of the plant and the issue as to whether the plant could withstand any earthquake that could reasonably be expected to occur on the Hosgri fault three miles from the site.

With the imposition of the moratorium on the issuance of operating licenses following the TMI accident, the record in this case was closed. After "TMI requirements" were issued by the Commission, the record in Diablo Canyon was reopened to consider so called "TMI issues."

The Board granted Applicant's motion seeking authority to conduct low power testing.^{3/}

The present decision deals with the remaining issues related to full-power operation.

During the time this matter has been before this Atomic Safety and Licensing Board delays beyond the control of the Board have consumed several years. They include approximately two years delay in construction of the plant due to labor trouble. The seismic problem held

^{2/} 10 NRC 453 (1979).

^{3/} Pacific Gas and Electric Co. (Diablo Canyon Nuclear Plant, Units 1 and 2) LBP-81-21, 4 NRC 107 (1981).

up the licensing process after the discovery of the close proximity of the Hosgri fault. The closeness of the fault, i.e., three miles, was unknown to the Applicant when it selected the site. In addition, the TMI "accident" resulted in a year's delay in the application proceedings for the Diablo Canyon Nuclear Power Plant. Further delay has flowed from the questions raised about the Applicant's quality assurance program, the resulting suspension of the low-power testing license which had been granted for Unit 1 and the institution by the Commission of an independent design verification program which is still in progress.

B. Procedural Posture of the Case

The hearings on the operating application are closed. This opinion is the Board's Initial Decision dealing with the granting of a full-power operating license.

It is issued with a caveat. It does not, nor is it intended to impinge in any way on the status of the Commission's suspension of the Diablo Canyon Plant's low-power license (CLI-81-30; 14 NRC 950 (1981)) or on the independent design verification program ordered by the Commission (id., at 955-958).

This Licensing Board's Initial Decision will, under the regulations, be reviewed by the Commission.

C. Identification of Parties

The parties who participated in these proceedings are:

1. The Pacific Gas and Electric Company, the Applicant, a public utility operating in the State of California.

2. Governor Brown was admitted as a representative of an interested State, i.e., California.

3. The Joint Intervenors represent San Luis Obispo Mothers for Peace; Scenic Shoreline Preservation Conference, Inc.; Ecology action Club; Sandra Silver; Gordon Silver; Elizabeth Apfelberg; and John F. Forster.

4. The NRC Staff.

D. Statement of Salient Facts

An emergency plan has been filed by the Applicant in this case. Such a plan is required to be submitted under Appendix E and 50.33(g) of 10 CFR Part 50. Requirements for the plan are contained in Appendix E and in § 50.47. Implementing guidance is given by NUREG-0654, FEMA-Rep-1, Rev. 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of

Nuclear Power Plants", November, 1980. The Joint Intervenors contended that the emergency plan is not acceptable in its present state of development. The Board's analysis found otherwise.

The Joint Intervenors contend that the pressurizer heaters, block valves and power-operated relief valves at Diablo Canyon require a change in classification to safety-grade standards. The conditions which ordain a requirement that a system be classified as "safety-grade" are either set forth in 10 CFR Part 100, Appendix A, III.(a), or are mandated by a specific Commission directive. The record shows that the Joint Intervenors failed to prove their contentions regarding a change in classification. The Board's analysis of the facts shows safety is not endangered by the use of the pressurizer heaters, block valves and PORV's installed at Diablo Canyon.

E. Statement of Legal Issues and Their Resolution

1. Does the state of onsite and offsite emergency preparedness provide reasonable assurance that adequate protective measures will be taken in the event of a radiological emergency?

The Board has considered the relevant portions of the record in the light of the requirements set forth in Appendix E of 10 CFR Part 50 and the standards contained in § 50.47 thereof, and finds that there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency.

2. Is the qualification of the pressurizer heaters as safety grade required either by the Commission or by criteria of Appendix A of 10 CFR Part 100? Is connecting only 1/2 of the heater banks to the emergency power supply adequate for the purpose intended?

The Board finds that there is no requirement for the pressurizer heaters to be classified "safety grade" either by the criteria of Appendix A, Section III.(c) of 10 CFR Part 100 or by a specific Commission mandate. The Board further finds that connection of only one-half of the heater banks to the emergency power supply is adequate for the purpose.

3. Are the power-operated relief valves (PORV's) and their associated block valves and instruments and controls required to be qualified as safety grade?

The Board finds that two of the PORV's and their associated block valves and instrumentation and controls must be "safety-grade" due to their role in protection against low-temperature overpressurization of the system. The record establishes that the instant valve systems are "safety-grade." The third system, which has no safety function, is "safety-grade" in all respects except for a supplementary pneumatic power source. The Board concludes that the PORV systems are adequate for the function to be performed.

F. Suggestions for Further Action

The Board recommends:

1. That County letters of agreement be obtained.
2. That the Staff assure itself of the reliability of radio communications which depend on the San Luis Obispo County microwave system.
3. That the Staff investigate the significance and degree of compliance with the requirements contained in footnote 1 of Part L of NUREG-0654.
4. That the Staff investigate whether the State has conducted an appropriate assessment of additional hospitals as required by criterion L(3) of NUREG-0654.
5. That the Staff assure, in consultation with FEMA, that the State plan contains a substantive response to the implementing criteria of Standard b(13) as regards radiological criteria for reentry of contaminated areas.
6. That the problem of potential role conflict in an emergency be addressed in instructions to emergency workers.

II. DECISIONS ON PENDING MOTIONS

Governor Edmund C. Brown, Jr., has moved "this Board to reopen the pending Diablo Canyon full-power license proceeding in order to permit the parties to submit evidence on quality assurance, to interrogate expert witnesses, and to advise the Board on the state of quality assurance at Diablo Canyon and the serious uncertainties affecting the safety of the as-built plant."

The motion to reopen the full-power hearing is misdirected, since the issue of quality assurance and quality control were adjudicated in the Board's partial initial decision on the low-power test proceeding issued July 17, 1981. It is that record that should be opened if there is newly discovered evidence to be considered. However, this Board no longer has jurisdiction of that record. Furthermore, on June 8, 1982, the Joint Intervenors filed a motion with the Appeal Board to reopen the record of the Licensing Board's partial initial decision.^{4/} Earlier, on November 19, 1981, the Commission had suspended the low-power license pursuant to 10 CFR 2.202 because new information raised questions

^{4/} Pacific Gas and Electric Company (Diablo Canyon Nuclear Power Plant, Units 1 and 2), LBP-81-21, 14 NRC 107 (1981).

about the Applicant's quality assurance program.^{5/} To find answers to the questions raised, the Commission ordered an independent design verification program which is currently in progress.^{6/}

In a Memorandum and Certification to the Commission (ALAB-681, July 16, 1982) the Appeal Board pointed out that: "Before we can reach the question of whether Joint Intervenors' motion meets standards for reopening the record, we must address the jurisdictional question raised by PG&E. Specifically, we must consider whether the Commission intended its November 19 enforcement order (or, if not, whether it now intends) to deprive the adjudicatory boards of jurisdiction to entertain the Joint Intervenors motion regarding the QA/QC issues at Diablo Canyon."

It accordingly certified to the Commission under 10 CFR 2.785(d) several questions.

It appears that the answers to the questions certified by the Appeal Board to the Commission will control the action, if any, this Board takes in response to Governor Brown's motion to reopen the proceedings to take evidence on quality assurance. Accordingly, Governor Brown's motion is being held under advisement.

^{5/} Pacific Gas & Electric Company (Diablo Canyon Nuclear Power Plant, Units 1 and 2) CLI-81-30, 14 NRC 950.

^{6/} Id. at 955-958.

III. OPINION ON INDIVIDUAL ISSUES

A. Contention 1 - Emergency Planning

Contention 1, as admitted by the Board in its Order of August 4, 1981, reads as follows:

PG&E and the combined onsite, state and local emergency response plans and preparedness do not comply with 10 CFR 50.33(g); 50.47 and revised Appendix E to Part 50.

The instant issues at bar are both extremely broad and complex. In order to present the resolution of these issues in an orderly fashion, the Board has considered them, seriatim, first as to compliance with 10 CFR 50.33(g) and then in the context of the planning standards as set forth in 10 CFR 50.47(b).

Planning Standard b(1): Assignment of Responsibility^{7/}

Onsite Preparedness

The Applicant has established an emergency response organization for coping with radiological emergencies. The Applicant's emergency plan assigns duties, responsibilities and authorities of personnel assigned to the emergency response organization. The Applicant has developed letters of agreement for emergency assistance from offsite organizations. The Applicant has the staff to respond to an emergency and to augment its initial response on a continuous basis. (Findings 3, 6-14)

State and Local Responsibilities

The State of California has established its emergency planning zones (EPZ's) around Diablo Canyon in a manner which differs substantially from the Federal zones defined in 10 CFR 50.47 c(2). There are a total of five emergency planning zones considered in this case; the California Basic EPZ, the extended EPZ, the California Ingestion Pathway EPZ, the Federal plume exposure EPZ, and the Federal Ingestion Pathway EPZ. The Board did not inquire into the technical

^{7/} Planning Standard b(1) states: Primary responsibilities for emergency response by the nuclear facility licensee and by State and local organizations within the Emergency Planning Zones have been assigned, the emergency responsibilities of the various supporting organizations have been specifically established, and each principal response organization has staff to respond and to augment its initial response on a continuous basis.

basis for the California zones since they are larger than the Federal zones and encompass them. We conclude, without considering technical validity, that the State acted within its responsibility set by 10 CFR 50.47 when it established its emergency planning zones. (Findings 16-20)

We conclude that the Federal requirements are minimum standards for planning and not inflexible targets which must not be exceeded. This Board, however, has no authority to enforce State standards which exceed those required by Federal regulations. That is for the State to do. (Findings 21, 22)

Completion of Standard Operating Procedures

There are to be 31 standard operating procedures (SOP's) incorporated into the San Luis Obispo Emergency Plan. Of these, 21 are complete. The completed SOP's apply to cities, fire districts and school districts within the Federally-defined 10-mile plume exposure pathway zone, while the incomplete plans apply to organizations which are outside the Federal zone but within the State Basic Emergency Planning Zone. (Finding 28)

San Luis Obispo County is planning to observe the State defined Basic Emergency Planning Zone (BEPZ) in its completed emergency plans. Thus, all 31 SOP's (11 remaining) will have to be developed in the completed county plan. The evidence, however, shows that the SOP's are

complete within the Federal 10-mile zone and that there are no insurmountable difficulties in completing the remaining SOP's. The existing procedures were developed by a consultant not only to serve the needs of the jurisdiction to which they apply but to serve as models to be used by other jurisdictions outside of the Federal 10-mile zone for development of their own procedures. Work is in progress on all of the incomplete procedures which are required for the State BEPZ. (Findings 25-28)

Staff and Applicant have argued and the Board has agreed that the requirements which the County plan must, meet insofar as this Board is concerned, are the Federal requirements as stated in 10 CFR 50.47 for a 10-mile plume Emergency Planning Zone (EPZ) and a 50-mile ingestion EPZ. Reasonable assurance for completion of the SOP's outside the 10-mile EPZ would not be required so long as they are complete within the 10-mile EPZ, according to Staff and Applicant. However, notwithstanding Federal requirements for planning zones, it is the State defined BEPZ which is to be implemented by the State, County and Applicant at Diablo Canyon. (Finding 25)

While there is no doubt as to the applicability of the requirements of 10 CFR 50.47 we find it incongruous to test the plan solely against the Federal standard in light of certain knowledge that it is the broader State plan which will be implemented. The intent of NRC and the Federal Emergency Management Agency (FEMA) on this is clearly stated in NUREG-0654:

"NRC and FEMA recognize that plans of licensees, State and local governments should not be developed in a vacuum or insolation from one another. Should an accident occur, the public can be best protected when the response of all parties is fully integrated."
(NUREG-0654, p. 23)

Where, as here, the State has chosen EPZ's which are greatly different from those defined in Federal regulations, we find it appropriate to regard the Federal zones as minimum requirements for planning. In this case compliance with the Federal requirements, while necessary, does not necessarily assure integration of licensee, State and local planning as stated in NUREG-0654.

Thus, although our analysis focuses on the details of planning within the Federally prescribed EPZ's, we believe it appropriate to inquire into the status of planning beyond those zones far enough to assure ourselves that the incomplete procedures will be integrated into the overall County plan in a timely manner.

In the case of the incomplete SOP's, we have the needed reasonable assurance since reasonable progress has been made to date in developing the first 21 SOP's and San Luis Obispo County continues in its lead responsibility for plan development. Model plans exist for the development of the others, and the actual development is in progress and will be completed prior to full power operation.
(Findings 28, 29)

Planning in Santa Barbara, Ventura and Monterey Counties

The northern boundaries of Santa Barbara County lie some 18 miles to the southeast of the Diablo Canyon plant. No planning for the plume exposure pathway is required for that county under 10 CFR 50.47 since it lies outside of the 10-mile EPZ defined therein. Neither is specific county planning required for the ingestion pathway since this planning is the responsibility of the State. (Finding 33)

While the Santa Barbara plan is not yet complete, the County has contracted to have such a plan prepared. The plan will be completed by mid-1982. It is being prepared by the same contractor who developed the plan for San Luis Obispo County. (Finding 33) Thus, there exists reasonable assurance that an emergency plan for Santa Barbara County will be integrated into the overall emergency response capability contemplated by the State even though not required by 10 CFR 50.47.

Monterey County falls within the limits of the 50-mile Federal ingestion pathway zone to the north of Diablo Canyon while portions of Ventura County falls within the State defined ingestion pathway zone to the South. The Board concludes that no County level emergency planning in these two Counties has been done or that it is required. The State will assume responsibility for interdiction of contaminated food or water in the ingestion pathway in the event such action is needed. (Finding 34)

Status of the State of California Emergency Plan

The State of California Emergency response plan had not had final approval by the State nor had FEMA conducted its final review or provided its findings at the time of the hearing. However, FEMA has reviewed and commented on an earlier version of the State plan and the State revised the plan using those comments. The State has completed approximately 85 to 90 percent of the State agency SOP's, and it is expected that the remainder will be completed along with the basic plan by July 1982. FEMA will review the plan and prepare findings at that time. (Findings 23, 24)

FEMA's interim findings, which were submitted November 2, 1981, addressed the County plan and not the State plan because of the specific relationships between the County and State in California. In this relationship it is the County which has the basic responsibility for protection of life and property. The State has backup responsibility, except for planning for the ingestion pathway zone (IPZ) and for recovery and reentry. Plans for these responsibilities are addressed in the State plan. Neither of these roles require immediate response in an emergency since they do not deal with immediate life threatening situations, and it is FEMA's view that the State could respond in these areas if needed. (Findings 15, 23, 24)

The board concludes: (1) that the State plan as it pertains to Diablo Canyon is complete but for a few SOP's,^{8/} (2) that a systematic process of development and review between the State and FEMA has occurred, (3) that FEMA is aware of and keeps abreast of current developments in the plan and will review it when it is complete, and (4) that there are no obstacles to completion of the plan.

The Board, therefore, concludes that there is reasonable assurance that the State plan will be substantially complete and capable of being implemented prior to full power operation of Diablo Canyon.

Letters of Agreement

The Applicant has submitted as part of its emergency response plan letters of agreement between itself and various organizations which would play a supporting role in the event of a radiological emergency. These letters are not detailed standard operating procedures but simply an agreement that an organization will provide some form of support if needed in an emergency. (Finding 13)

^{8/} Among these items asserted by Joint Intervenors are specific procedures for California Polytechnic Institute and the California Men's Colony; both State jurisdictions. Both institutions are outside of the Federal 10-mile plume EPZ where evacuation would not normally be planned.

San Luis Obispo County also plans on incorporating letters of agreement in its emergency plan but has not done so yet. The County plans to contact Federal and State agencies and private businesses such as contractors, banks and gas stations for the purpose of obtaining supporting agreements. The number and nature of these agreements have not yet been worked out. (Finding 35)

The elements of planning important to an actual emergency response are incorporated into standard operating procedures, not letters of agreement. Letters of agreement are developed with organizations which could have some noncritical but useful supporting role to play in an emergency. (Finding 35) Our review leads to the conclusion that the letters of agreement were deferred and not neglected in the planning process. The record shows clearly that the County plans to obtain the letters and no problems in doing so were identified by any party. These letters should be obtained prior to full-power operation.

Availability of Emergency Workers

Joint Intervenors allege that emergency workers necessary to successful implementation of the emergency plan might not be available because of the possibility of role conflicts. This was described by Dr. Erickson as the conflict an individual might encounter between his duties to assure the safety of his family and his emergency duties. There is the possibility that a person might resolve the conflict in a radiological emergency by evacuating along with his family rather than

reporting for emergency duty. Joint Intervenors feel that a scientific sociological survey of emergency workers is needed to assess this possibility among others which we will address later. (Finding 35)

The possibility of role conflict exists among emergency workers. The source of conflict on the part of individuals is concern for the safety of their families in an emergency. However, this concern can be reduced for most workers through assurance that their families' safety has been provided for. None of the witnesses thought that trained professionals such as police or medical workers would resolve their conflicts in favor of abandonment of their emergency duties. The focus of concern was on the "volunteers" or general workers such as gas station attendants, bus drivers, and others who might have less critical but useful duties to perform during an emergency. (Findings 39-45)

We accept that some general workers might not report for duty in a radiological emergency; however, we have found sufficient mitigating circumstances to conclude that defections would not be of such magnitude as to jeopardize the successful implementation of the plan. We are convinced that most responsible workers would resolve their conflicts in a common-sense fashion by seeing to their families' safety and then reporting for duty. (Findings 42, 43, 44)

We are not convinced that a scientific survey of workers would add anything of significance to practical emergency planning. Since we

know of and accept the phenomenon of role conflict, we think it more reasonable to simply address the matter in the instructions given to general workers who would have some emergency duties. We assume that responsible citizens will act intelligently on such instructions. The Board finds that no scientific survey of potential emergency workers is needed to assure their availability during a radiological emergency.

(Finding 46)

Conclusion

Based on the evidence of record the Board finds that there is reasonable assurance that the requirements of Planning Standard 10 CFR 50.47 b(1) have been or will be met prior to the granting of a license for full power operation.

The Board has determined that those aspects of State and local emergency plans which have been found to be incomplete as regards this standard should be completed prior to the granting of an operating license. Matters to be completed are: (1) FEMA findings on the adequacy of the State Plan as it applies to Diablo Canyon, and (2) authentication of SOP's which are required by Federal regulations. (Findings 30, 31)

The Board has determined that preparation of an emergency plan is not required by Federal regulations to be performed by Ventura,

Monterey or San Barbara Counties. However, the Staff should assure itself, based on FEMA findings on the adequacy of the State Plan, that planning for Santa Barbara County has been considered and integrated into the overall State-local emergency response capability. We are not convinced that a scientific sociological survey of emergency workers to assess role conflicts would be of value for emergency planning. However, the problem of role conflict should be addressed in instructions to emergency workers. San Luis Obispo County of letters of agreement with supporting organizations should be completed.

Planning Standard b(2): Onsite Emergency Organization^{9/}

The applicant has adequately specified its onshift responsibilities for emergency response and maintains adequate staffing to provide initial facility accident response in key areas at all times. The applicant is capable of timely augmentation of response capabilities and it has specified interfaces among various onsite and offsite response activities. (Findings 50-58)

Requirements of NUREG-0654 Table B-1

Joint Intervenors question the ability to evaluate staffing requirements as specified in Table B-1 of NUREG-0654. This is based on Staff Exhibit 34, which is an evaluation of the Applicant's emergency plan performed by Battelle National Laboratory. The problem noted by Battelle was that Sections 5.1.7 and 5.2.1 and Table 5.2.1 of the Applicant's plan were not adequate to evaluate compliance with Table B-1 of NUREG-0654. The Staff witness thought the Battelle evaluation deficient in this instance because the Battelle reviewers had not reviewed the Applicant's implementing procedures. His additional

^{9/} Planning Standard b(2) states: Onshift facility licensee responsibilities for emergency response are unambiguously defined, adequate staffing to provide initial facility accident response in key functional areas is maintained at all times, timely augmentation of response capabilities is available, and the interfaces among various onsite response activities and offsite support and response activities are specified.

review of the implementing procedures as well as a site visit led him to the conclusion that the Applicant's designation of Staff positions was in conformance with Table B-1 of NUREG-0654. Differences between the plan and the guidance resulted from different titles of positions used by the Applicant in its plan relative to those stated in Table B-1. (Findings 59-60) The Board, therefore, concludes that the review of the NRC Staff was thorough and that the Applicant's staffing plans are in substantive conformance to Table B-1 of NUREG-0654.

The guidance given in Table B-1 of NUREG-0654 sets goals for the time in which licensees should be able to augment their regular shift staff in an emergency. All but one of the goals are met. Studies of staff travel times by the Applicant show that during evenings and weekends the 30-minute augmentation goal for 11 additional persons cannot be fully met. The studies show that initial augmentation with 11 persons will take place over a period of from 20 to 45 minutes and possibly extending up to one hour. (Finding 62)

The board concludes that the deviation from guidance is due to the remoteness of the site and is of no significance to public health and safety at Diablo Canyon. The existing plant staff has the capability of initiating vital emergency response actions promptly without augmentation. The amount of delay is not excessive considering the remote location of the site and the overall ability of the Applicant to respond to an emergency and to augment its shift staff. (Findings 62-65)

Role Conflicts Among Plant Workers

Joint Intervenors raised the possibility that plant operators might evacuate themselves and their families during a radiological emergency rather than report for emergency duty. They cite a report prepared by the NRC Staff in the wake of the Three Mile Island (TMI) accident which states that rumors were heard after the accident that TMI operators might behave as described if another accident should occur. (Findings 66, 67)

Joint Intervenor acknowledged, however, that role conflict would not be expected to cause professionally trained emergency workers such as highway patrol officers and medical workers to abandon their duties in an emergency. (Finding 67)

We regard plant operators to be in the category of trained professionals who, as a group, are least likely to resolve potential role conflicts in favor of leaving their posts or failing to report for duty in an emergency. Furthermore, we see no necessary dichotomy between operators performing their duties and seeing to their family's safety. Reasonable individuals would do both. We therefore conclude that role conflict, even if it exists for a few plant operators, is not of sufficient magnitude to cause the Applicant's staffing plans under this standard to be unimplementable. (Findings 67-70)

Planning Standard b(3): Emergency Response Support and Resources^{10/}

The Applicant has made arrangements for requesting and using assistance resources. Arrangements have been made to accommodate State and local staff at the Applicant's emergency operations facility (EOF), and organizations capable of augmenting the response have been identified. (Findings 75-84).

FEMA has reviewed offsite plans for compliance with requirements of this standard and has no recommendation for corrective actions. (Finding 85)

Joint Intervenors object that: (1) the State and County plans contain no letters of agreement and that support resources have not been identified, (2) the State plan contains insufficient detail as to the extent of Federal assistance or times of arrival, (3) Counties other than San Luis Obispo County have not begun the planning process, (4) several standard operating procedures (SOP's) are incomplete and (5) that emergency workers outside the danger zone might not move into that zone if asked to do so. The Board has addressed questions related to County letters of agreement, emergency preparedness in other

^{10/} Planning Standard b(3) states: Arrangements for requesting and effectively using assistance resources have been made, arrangements to accommodate State and local staff at the licensee's near-site Emergency Operations Facility have been made, and other organizations capable of augmenting the planned response have been identified.

Counties, standard operating procedures and responses of emergency workers in planning standards b(1) and b(2) and will not repeat that here.

The State plan contains adequate detail as to the extent of Federal assistance. Information on Federal agency response times is provided in the Applicant's Emergency Response Plan. (Finding 78) Based on the record, the FEMA findings, and the lack of contradictory evidence, the Board concludes that the plans for meeting this standard meet the requirements of 10 CFR 50.47b (3) and Appendix E.IV.A of 10 CFR Part 50, and that the plans conform to the criteria of NUREG-0654.

Planning Standard b(4): Emergency Classification System^{11/}

The applicant has adopted a standard emergency classification and action level scheme which includes specified facility system and effluent parameters. State and local response plans call for reliance on information provided by the Applicant to determine their initial responses. (Findings 90-97)

FEMA has reviewed offsite preparedness relevant to this standard and has no recommendations for correction. (Finding 95)

Joint Intervenors object: (1) that the existing classification system failed to accomplish prompt public notification during the August 19, 1981 emergency planning exercise, (2) that the classification system should require sounding of sirens preferably at the alert level but as a minimum at the site area emergency level and (3) Applicant's emergency classification system is not in total compliance with NUREG-0654 based on the report of Battelle Laboratories which was submitted as NRC's Staff Exhibit 34. (Joint Intervenors Proposed Findings, p. 37)

^{11/} Planning Standard b(4) states: A standard emergency classification and action level scheme, the bases of which include facility system and effluent parameters, is in use by the nuclear facility licensee, and State and local response plans call for reliance on information provided by facility licensees for determinations of minimum initial offsite response measures.

In the emergency exercise held August 19, 1981 an order to simulate sounding of the emergency warning sirens was not given within 15 minutes after the onset of a general emergency. The Staff and the Applicant acknowledged that this was a deficiency uncovered by the exercise and that it should be remedied. We do not attribute the error to the emergency classification system, but simply to the failure of individuals to take the appropriate action in a timely fashion. The Staff has acknowledged that the error should be corrected and we expect that it will not be repeated. (Finding 93)

We do not regard Joint Intervenors' assertion that the early warning sirens should be sounded at the alert level as being within the scope of this planning standard. We will address this matter in our discussion of Planning Standard b(5).

The deficiencies identified in the Battelle Report (Staff Exhibit 34) have been remedied in the Applicant's Emergency Plan. Therefore, there is no remaining controversy on this matter. (Finding 96)

Based on the evidence, the favorable FEMA findings, and the lack of contradictory evidence, the Board concludes that the plans for this requirement meet the requirements of 10 CFR 50.47 b(4) and Appendix E.IV.a of 10 CFR Part 50 and that the plans conform to the criteria of Part D of NUREG-0654.

Planning Standard b(5): Notification Methods and Procedures^{12/}

The Applicant, the County and the State have developed plans for the methods and procedures they will use for disseminating information in the event of an emergency at Diablo Canyon. The initial notification of an accident or abnormal condition at Diablo Canyon will come from the plant. The plant will indicate in its initial messages the severity of the situation using the emergency action level classification system. Notification of any abnormal conditions at the plant will go to the San Luis Obispo County Sheriff's Office. Upon receiving such a notification the Sheriff or Watch Commander will in turn alert other offices and emergency workers. The actions to be taken by the Sheriff's Office are defined in the County Plan and are guided by the Emergency Action Level Classification. County departments, schools and other organizations will be notified simultaneously by means of monitor radio with a tone alert. (Findings 100-104)

Responsibility for public notification lies with the County. If the County decides to issue a warning to the public, it will warn not only that an emergency condition exists but it will also issue

^{12/} Planning Standard b(5) states: Procedures have been established for notification, by the licensee, of State and local response organizations and for notification of emergency personnel by all organizations; the content of initial and followup messages to response organizations and the public has been established; and means to provide early notification within the plume exposure pathway EPZ have been established.

instructions to the public so that they may implement predetermined protective actions. Central to the public warning system is an area-wide siren system which has been designated the early warning system (EWS). This system has been installed within the State BEPZ. Its intent is to alert members of the general public to tune their radios to the emergency broadcast system so that they may receive emergency instructions. The emergency instructions will not necessarily be to recommend evacuation. Such instructions might also include directions to take shelter, close windows and doors, shut off ventilation systems and to listen to radio or television for further information. The instructions would be based on recommendations of the Unified Dose Assessment Center (UDAC) with the approval of the County Direction and Control Group. (Findings 103, 104, 107, 108)

The siren system is not the only means of notification of the public. It has been anticipated that many of the members of the public might not be reached by a siren tone or might not be in a position to understand the meaning of the siren. Accordingly there have been developed supplementary means of warning. These include warning of populations in parks and on beaches by mobile vehicles, equipped with public address units. Other populations, such as those that are isolated or otherwise out of siren range, will be notified by automobile or off-road vehicles carrying public address systems. The effort will be assisted by helicopters as required. Ships at sea will

be notified by marine radio and directly by the U.S. Coast Guard. Schools, hospitals, convalescent hospitals and like institutions will be notified by instructions from a tone alert radio system from the County. Certain persons, such as those deaf or homebound, will be warned by direct patrol car visits, home calls or teletype service as appropriate. These people will be preregistered as persons needing special assistance and the registration lists will be established at local police and fire stations. If notification is required in the State extended EPZ, it will be made by police and fire vehicles utilizing public address systems. (Finding 115)

Joint Intervenors attempted to show through cross-examination that the siren system was faulty in a number of ways. These include the fact that the siren system may be inadequate to notify persons inside of large structures, such as schools and hospitals; that the sirens are located only in the BEPZ, although the San Luis Obispo County Plan provides for the possibility of evacuation of the extended EPZ; and that mandatory sounding of the sirens should take place at the alert stage or as a minimum at the site area emergency stage in order to assure prompt public notification. Additionally, the overall warning system may not be adequate for notification of 100 percent of the population within the required time limit.

We deal first with the distribution of sirens within the EPZ. We note at the outset that an early warning system as required by

10 CFR 50.47 must be located within the 10-mile plume EPZ as defined in that regulation. However, the EPZ that will actually be used is the State of California BEPZ, which is larger than that defined by Federal regulations. The EWS sirens are located throughout the State of California BEPZ. (Finding 104)

Joint Intervenors presented no facts justifying extending the early warning siren system into the State extended BEPZ. We find no merit in their argument. (Finding 115)

Joint Intervenors further object that the siren system may be inadequate to notify persons inside large structures. This assertion is factually correct but already acknowledged in the emergency plan. The Plan provides for alternative notification devices, such as tone alerts to be installed and activated by radio in these structures. Not all of these alerting devices had yet been installed at the time of the hearing. The Board will require that tone alert or equivalent warning devices should be operational in schools, hospitals and detention facilities and other large structures prior to full-power operation. (Finding 115)

Joint Intervenors and Governor Brown both fault the early warning siren system because it requires mandatory sounding only at the general

emergency stage with discretionary sounding of the sirens at a site area emergency. They believe that the sirens should be sounded at the alert or site area emergency levels. (Findings 116, 117)

Governor Brown argues that the advantage of sounding the sirens at lesser levels of emergency is that the public would get an early warning and thus would be enabled to begin its preparation for evacuation in case one should later be ordered. We find little merit in this argument for two reasons. First, the media will carry information about any incident at Diablo Canyon and therefore the public would have advance warning in any case. Second, Governor Brown's argument presumes that alerts or site area emergencies will inevitably rise to a state of general emergency. This is invalid. While an initial emergency may progressively worsen, it is also possible that it will not. Under the plan, if it appears that an initial situation is going to progress into something more serious requiring protective action, the sirens can be sounded. If, on the other hand, it appears that the emergency will stabilize or that plant personnel will gain control of the situation there would be no need for sirens, and it would be a false signal at that time to have mandatory warning. It is, therefore, valid to retain discretionary capabilities for sounding sirens for a site area emergency. We, therefore, find that the County plan for mandatory sounding of sirens at the general

emergency level and for discretionary sounding of sirens at the site area emergency level is valid and should not be disturbed.

(Findings 118-120)

Joint Intervenors are in error in their assertion that 100 percent notification is required. The design objective of the initial notification system provides for essentially 100-percent notification of the population within five miles of the site within 15 minutes. Special arrangements are needed to achieve notification of populations within the entire EPZ within 45 minutes. In the Diablo Canyon area the population within six miles of the site is low, consisting of approximately 69 persons. (Applicant Ex. 80, Fig 1.5-2) We have no evidence showing why these few people could not be notified within the guidelines of NUREG-0654. NUREG-0654 specifically recognizes that its design objectives do not guarantee that early notification can be provided throughout the EPZ with 100 percent assurance. (NUREG-0654, pp. 3-1, 3-3)

However, the plan calls for not only a siren system but for numerous special arrangements for notification of population within the entire EPZ who may not receive the initial notification by means of the siren. Tone alert signals, vehicle-mounted sirens, special visits by patrol cars, helicopter-mounted loud speakers, paging devices and telephone all combine with the early warning siren system to alert the general public and key personnel. These mechanisms are sufficient to give reasonable assurance that essentially 100 percent of the population could be notified of an emergency although 100-percent

warning cannot be guaranteed. We conclude that this is a reasonable plan for notification of essentially 100 percent of the public within the plume exposure EPZ. (Finding 115)

The County plan calls for a cascade or sequential warning system to be used to alert County emergency workers. Joint Intervenors object that sequential or cascade call-down processes are prohibited by NUREG-0654, Appendix 3. The requirement of NUREG-0654 is a precaution against the time that would be lost if a single warning point had to notify all or a substantial number of other agencies and institutions in the County in an emergency. The requirement does not prohibit individual offices from summoning individual emergency workers by sequential calling methods. The planned system of warning is therefore not in conflict with NUREG-0654, Appendix 3. (Findings 111-113)

The Board concludes that the offsite plans for notification of the public are developed and that implementation is sufficiently complete to provide reasonable assurance that essentially complete and timely notification of the public can be achieved in accordance with 10 CFR 50.47b(5). The deficiencies in implementation noted by FEMA must be corrected and verified by the Staff and FEMA prior to full-power operation. (Findings 127-129)

Planning Standard b(6): Emergency Communications^{13/}

Based on the evidence, we find that the Applicant's onsite emergency communication system is adequately designed and is capable of being implemented during an emergency. The record reveals no serious deficiencies in the onsite emergency communications system. (Findings 135-139)

Offsite communications in the County will rely on commercial telephone service, dedicated telephone service, radio-activated pagers and radio communication. Radio communication has an important role to play in a radiological emergency at Diablo Canyon and it was this aspect of communications that was most vigorously disputed. (Findings 142, 144)

The San Luis Obispo County radio communications network is complicated because of the problems imposed by mountainous terrain in the area which inhibits radio communication. In order for radio communication to reach the entire County, several mountaintop radio transmitters are used to broadcast the same message at one time. The message to be broadcast must be sent to the transmitters from the Sheriff's Department by way of a microwave transmitter system. The system would be vulnerable to failure if the Sheriff's microwave system

^{13/} Planning Standard b(6) states: Provisions exist for prompt communications among principal response organizations to emergency personnel and to the public.

failed or if one of the mountain repeater stations were to fail. The history of the microwave system reflects a number of both design and maintenance problems. It is these problems that Governor Brown and Joint Intervenors argue make the system inadequate for emergency response in the event of an incident at Diablo Canyon. Having studied the problems in the County communication system (Governor Brown Ex. 10), the Board is convinced that the communication system contains a number of design and maintenance difficulties which should be upgraded. However, the problems with the general system are of a noncritical nature for emergency response. (Findings 148, 149)

We reach this conclusion because of our review of the specific communication system required for emergency response. The communication system most directly involved in the emergency response plan is the local government VHF (green) channel. This specific part of the system is essential for issuing a signal for activation of sirens or backup signals for activation of sirens and for the emergency pager system which would be installed in hospitals, schools and County offices. The technical analysis of this system shows that for this specific channel the Applicant has agreed to purchase new radio transmitters, and that when these systems are in place the local government VHF system will be in excellent condition to handle communication needs for many years. (Findings 150-153)

The local government also runs a UHF system termed the County animal control system. This system would be used to enable health physics teams which go into the field in mobile units to communicate with the UDAC. The field teams could be isolated from UDAC if the microwave system failed. One UHF mountaintop transmitter for this system is of solid state design and apparently in good condition, however, requiring little more than normal maintenance to keep it operational. Another repeater radio will be added at Davis Peak. (Findings 154-156)

In view of the fact that the microwave system has not had a major failure in seven years, we are unable to find the system inadequately reliable at present, although it may well require future upgrading. (Finding 157)

The Board concludes that the critical requirements of the communication system for offsite communications in San Luis Obispo County are or will be met. The equipment needed to activate sirens, backup systems, pagers and tone monitors is on order and expected to be installed by May 20, 1982. (Finding 148)

The Board concludes that the offsite communication system for San Luis Obispo County is or will be adequate to cope with a radiological emergency at Diablo Canyon and the plans for emergency communications meet the requirements of 10 CFR 50.47b(6) and the criteria of Part F

of NUREG-0654. The Staff, however, should assure itself of the continuing reliability of emergency communication systems which are dependent on the County microwave system since the microwave system could be a weak link in County radio communications.

Planning Standard b(7): Public Education and Information^{14/}

Uncontested Findings

The Applicant has published periodicals entitled "Diablo Canyon Newsletters" which give details on various aspects of emergency planning at Diablo Canyon. This includes the description of radiation, the description of how the public would be notified in the event of an emergency, descriptions of the accident classification system and a number of other topics related to emergency planning. A page of emergency instructions has been included in the current San Luis Obispo County phone book. A media contact location has been established at Cuesta College Auditorium and public information officers have been designated for the coordinated dissemination of information to the public. (Findings 163, 164, 168-170)

Contested Issues

Joint Intervenors and Governor Brown fault the planning under this standard in three ways. First, they assert that San Luis Obispo County has not implemented a public information program. This assertion is

^{14/} Planning Standard b(7) states: Information is made available to the public on a periodic basis on how they will be notified and what their initial actions should be in an emergency (e.g., listening to a local broadcast station and remaining indoors), the principal points of contact with the news media for dissemination of information during an emergency (including the physical location or locations) are established in advance, and procedures for coordinated dissemination of information are established.

based on the fact, which was undisputed in hearing, that the County has not yet published its information booklet or pamphlet. Second, based on the undisputed testimony of Mr. MacElvaine, they assert that the public knowledge of evacuation routes and expected responses in the event of an emergency is at the present time very low. Third, they assert that the public information program is deficient in its design because it does not take account of certain specific local information concerning attitudes and perceptions of the County residents. This information could be obtained through a survey of local populations and the resulting information could be used to sharpen the development of the County's public education program.

General Public Knowledge

The County plans to publish an information booklet containing emergency information but had not done so at the time of the hearing. The booklet exists in draft form and has been reviewed by the NRC Staff. Because the booklet lacked the approval of the County Board of Supervisors, it was not printed in final form or issued to the public when the draft was complete. Issuance was expected on June 20, 1982. When issued, dissemination will occur throughout the State BEPZ. (Findings 165, 175)

The Board concludes that the early publication of this booklet is important to the overall information needs of the public regarding emergency planning in San Luis Obispo County and that its issuance

should not be delayed. We accept the uncontradicted testimony of Supervisor MacElvaine that the current public knowledge of emergency response in San Luis Obispo County is low. (Findings 173-175) Adequate time should be allowed for general education of the public prior to reactor startup. We, therefore, require that a public information booklet be published at the earliest reasonable date and that it be disseminated to the public well in advance of full-power operation at Diablo Canyon.

Sociological Surveys

Joint Intervenors' premise in criticizing the public information program is that hazards of radiation are different from those of natural disasters and other accidents. They allege that a nuclear emergency involves a long term and invisible threat which provokes deeper and more lasting forms of public anxiety than other hazards; a consequence of this difference is that people will behave differently in a radiological emergency than they would during other disasters. In some cases they will overreact by evacuating earlier than advised, by moving longer distances than advised and in general doing more than is required. Another consequence is that at the same time a substantial number of people will underreact and become immobilized. These events will take place because people do not know what the dangerous substance looks like or feels like or how far it can reach out into the

countryside. Joint Intervenors urge that a social survey of local populations be taken because it would provide important information on public attitudes towards these matters that could be used to improve the plans for public information. (Findings 176, 179-182)

The Board, however, is not convinced that a social survey would offer useful improvement in public information planning for several reasons. Even though it may be true that a radiological emergency is different from other kinds of emergencies, Intervenors' examples apply primarily to the aftermath of an accident. While radiation risk might provoke lasting forms of public anxiety, we are concerned under this standard not with long-lasting anxiety but with the adequacy of an information program which instructs the public to seek shelter or evacuate in an emergency. These required actions are not notably different from those required in the face of other hazards and we conclude that a survey would not assist in improving the plan. (Finding 187)

We also have problems with the questions of overreacting and underreacting on the part of the public. In the first instance, there is no apparent hazard to public health and safety if overreaction occurs. Assuming overreaction was likely, we have no remedy beyond that which is already planned, which is to broadcast accurate, consistent information. (Finding 185)

The testimony shows that some public underreaction does occur in emergencies. Some people require repeated warnings and repeated information bulletins in order to become convinced that a hazard is real and that they should react. We see little value in a social survey in counteracting this phenomenon, however. The phenomenon of underreaction is already known. The remedy is repeated consistent warnings and information bulletins. The public will receive these through the emergency broadcast system. Thus, although we accept the possibility of underreaction among segments of the population, we do not accept the likelihood that a social survey confirming this would assist in the development of a better plan for public information. (Finding 184)

Joint Intervenors raised a number of contingencies which they feel a social survey would help to resolve. These contingencies include the possibility that parents of school-age children would seek out their children before evacuating, that the sources of information may not be considered credible by the population and that people will not follow instructions regarding evacuation directions, or that they may take individual evacuation directions which the plan does not contemplate. (Finding 181)

Our examination of the record does not reveal any mandatory requirements pertaining to these contingencies one way or another. The plan provides for the busing of children out of the danger zone in an

emergency. It does not prohibit parents who are not satisfied with this arrangement from picking up their children before evacuating. The plan does not prescribe mandatory evacuation routes, but published information shows routes available for evacuation. The choice of routes and destinations is left to the people evacuating. As to the credibility of information, Intervenors' witness agreed that the populace on being warned of danger, would respond appropriately. (Finding 178)

An overview of what is required in public evacuation would be helpful in contemplating the validity of these contingencies. The Federal regulations are based on analyses (NUREG-0396) that show that public health and safety can be protected if the public evacuates the plume EPZ, which is an area having a radius of about 10 miles from the plant. It is established on our record that the population in the annulus from 0 to 6 miles from Diablo Canyon numbers approximately 69 persons. Thus, it is clear that most of the population must be evacuated from the annulus from 6 to 10 miles in order to protect health and safety as contemplated in the Federal regulations. The longest net distance from the plant that the vast majority of the population would have to travel in order to secure protection from plume irradiation is 4 miles.^{15/} Regardless of what the

^{15/} The resident population in that annulus is about 17,500 persons. (Applicant Ex. 80, Fig 1.5-2) Actual distances they must travel will vary because all roads do not follow the shortest possible route. (Id., Fig 1.5-6) The conclusion is not altered, however.

individual citizen's ultimate destination is or the distance travelled or directions chosen, the minimum actions that must be taken to obtain radiation protection appear simple and straightforward. Within this perspective, we conclude that the numerous contingencies alluded to in Joint Intervenors' testimony would not cause the plan to fail even assuming they were to occur.

If we were to order a survey, Dr. Johnson would have us gather data on socioeconomic and demographic population characteristics, for example race, ethnicity, age, sex structure, family size, occupation, education, automobile ownership and numerous other characteristics. However interesting such data might be, it is irrelevant to the task of informing the public about the necessity to travel a limited distance from Diablo Canyon in an emergency. (Findings 185, 186)

The Board found Dr. Mileti's testimony more credible as regards the public information program. His view was simply that a number of disasters of other types have been studied and that as a result of these studies sufficient knowledge exists to conduct an adequate public information program. (Finding 177) This appears to be all that is called for by Standard G of NUREG-0654. Part 2 of that standard states "that the public information program shall provide the permanent and transient adult population within the plume exposure EPZ an adequate opportunity to become aware of the information annually." Thus, a program that makes the public aware of the information on emergency

planning and evacuation is sufficient. NUREG-0654 presumes that citizens will act reasonably on the information that is provided to them.

The Board concludes that the actions planned by the Applicant and County under Planning Standard b(7) give reasonable assurance that the public can and will be given adequate information on how they will be notified and what their actions should be if a radiological emergency should occur at Diablo Canyon. The requirements of Part 50.47 b (7) and the criteria of NUREG-0654 part G have been or will be met. We decline to order a social survey as advocated by Joint Intervenors and Governor Brown since it is doubtful that the results of a survey could be used to improve public information planning.

We conclude that the current level of public understanding of emergency response is low. Therefore, publication and distribution of an information booklet should take place at the earliest reasonable date well in advance of reactor operation.

Planning Standard b(8): Emergency Facilities and Equipment^{16/}

The Board has reviewed the full record on this standard and finds that the Applicant and the County are in substantial compliance with the guidance of NUREG-0654. The majority of items required under this guidance were uncontested. We conclude that the Applicant has submitted an adequate description of its emergency facilities and equipment, that the Staff and FEMA review has been adequate and that adequate emergency facilities and equipment exist or will be provided to cope with a radiological emergency at Diablo Canyon. (Findings 192-197)

The FEMA review of this standard resulted in its recommendation for installation of additional communications equipment and a backup power source for the Emergency Operations Center (EOC). Agreements with the Applicant and County have been reached and FEMA will verify that corrective actions have been taken when they are complete. (Findings 209, 210)

Joint Intervenors objected that although an EOF has been established it is inadequate because it is housed in a trailer on an interim basis until the permanent facility is completed in about mid-1983. They claim that this could not be relied upon during adverse environmental conditions. These conditions, however, were unspecified

^{16/} Planning Standard b(8) states: Adequate emergency facilities and equipment to support the emergency response are provided and maintained.

and the Board found them vague and unsupported by evidence.

(Finding 198)

Joint Intervenors assert that the Operational Support Center (OSC) is in violation of NUREG-0654 requirements that specific equipment be stored there. The required equipment includes respiratory equipment, protective clothing, portable lighting, monitoring equipment, cameras and communication equipment. They object that, in spite of the fact that the center might accommodate up to 200 people, only two emergency kits are stored there. This appears to be a possible misunderstanding on the part of Joint Intervenors that the people who would assemble at the OSC would be outfitted with protective equipment there. This is not in the plan. The plan specifies that onsite personnel will be outfitted with protective equipment elsewhere in the plant. Emergency kits are in the OSC to be used only in the event of a special need. There is opportunity for personnel to equip themselves with respiratory equipment, protective clothing, portable lighting and monitoring equipment elsewhere on site. (Findings 199, 204)

No special precautions for habitability have been taken for the OSC. The intent is to use it as an assembly area for onsite personnel in an emergency. If the OSC should become uninhabitable during an emergency, it would be evacuated. Equipment stored there is intended to aid an evacuation. After reviewing the plan and the testimony for the OSC we conclude the equipment stored there is reasonable for the purpose intended. (Finding 200)

The Board concludes that adequate emergency facilities and equipment to support the emergency response have been or will be provided and maintained in accordance with the requirements of Planning Standard b(8). (Findings 206-208) Correction of the deficiencies noted by FEMA for this planning standard should be verified as being complete prior to plant operation. (Findings 209, 210)

The Board concludes that the requirements of 50.47 b(8) and the criteria of Part H of NUREG-0654 have or will be met promptly by the Applicant and San Luis Obispo County.

Planning Standard b(9): Accident Assessment^{17/}

The Applicant has made an adequate demonstration of its capabilities for assessing and monitoring a radiological emergency at Diablo Canyon. It has the onsite capability and resources to assess an accident throughout its course and it has the capability of post-accident sampling and radiation monitoring in the plant. The Applicant has the capability of assessing its source terms in the event of an accident and in establishing the magnitude of release of radioactive materials based on plant system parameters and effluent monitors. It has an Emergency Assessment and Response System (EARS), a computerized assessment capability for tracking a plume under a variety of meteorological conditions, and it has meteorological instruments capable of supplying the data needed for such computations. It has redundant means for determining release rates and projected doses if the instruments used for this assessment are inoperable, and it has the capability for field monitoring. (Findings 214-223)

The County has established the capability for field monitoring. Rapid radiological assessment capability exists through the UDAC and the EARS system. Means exist to relate contamination levels to dose rates for key isotopes in the environment. Capability exists for

^{17/} Planning Standard b(9) states: Adequate methods, systems and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition are in use.

tracking the airborne radioactive plume using Federal and State resources. FEMA has found the County capabilities to be satisfactory under this standard. (Findings 219, 220, 243)

UDAC Calculations

Joint Intervenors object that the County personnel who perform the hand calculations in the UDAC receive only annual drills and do not perform these calculations in the course of their normal employment. They assert that this is not adequate to assure prompt, accurate or effective functioning in the UDAC. The required calculations are specified in detail in Appendix J of the Applicant's Emergency Plan. These calculations would be difficult for a layman; however, an expert should be able to perform the required computations with no difficulty given the guidance available. The principal computations will be made by computer; backup hand computations will be made in the event that the computer system fails during an emergency. Under these circumstances, we conclude that annual drills on the required computations are adequate to enable the UDAC Staff to make the computations if needed. (Finding 221)

Accuracy of Plant Vent Monitors and Meteorological Model

Joint Intervenors object to the fact that the plant vent monitor readings which are used to estimate radioactive release in the event of

an emergency have an error band which has not been estimated. The testimony shows that these measurements may have errors or uncertainties in the range of approximately 10 to something less than 50 percent. The guidance contained in Regulatory Guide 1.97, Revision 2, suggests that such readings should have errors which are within a factor of 2 of the correct value. We conclude, therefore, that the errors inherent in the instrumentation for vent monitoring are within that guidance. (Findings 224, 227)

Vent monitor readings are not the only means of determining releases. They can also be determined from samples and flow rate data. This is a better method of doing it than by vent monitor readings. Vent monitor readings are used for a prompt assessment of radiation release. However, the dose assessments needed for public health and safety would be taken from field measurements, which are accurate. There is, therefore, no endangerment to public health and safety implicit in the instrument error levels which have been specified for vent monitor readings. (Findings 225, 226)

Joint Intervenors assert that there are unquantified errors in deposition velocity, plume height and dispersion prediction, which are parameters used by the meteorological dispersion model, or results calculated from the model. The meteorological dispersion model is used for tracking the plume and giving guidance to field teams, but not as a principal means of dose assessment. Field monitoring teams will use

the guidance by going to the locations of predicted radioactivity and taking actual measurements. In view of the conservatism built into the meteorological model, its intended use, and the planned means for dose assessment, we conclude that the uncertainties inherent in the model do not create any public health and safety concerns. (Findings 228-230)

Adequacy of Accident Monitoring Equipment

Joint Intervenors assert that the Applicant has failed to demonstrate compliance with applicable accident monitoring instrumentation guidance contained in Regulatory Guide 1.97, Revision 2, that adequate accident monitoring instrumentation equipment to support the emergency response is maintained and in use. This refers to the same issue raised by Governor Brown in relation to a number of items that required correction under the Diablo Canyon Low-Power Operating License.

The Applicant has made a written commitment to the Staff to correct the items needed for compliance with Revision 2 of Regulatory Guide 1.97. The commitment identified items which needed no correction and items needing correction and indicated that such corrections will be made by June 1, 1983 as required. The equipment needed to satisfy this planning standard, however, was contained in the list of items which require no correction. The Applicant is already in compliance as regards the equipment needed for radiological monitoring under this

planning standard. The regulatory staff has adequate enforcement capability to ensure that the Applicant meets its written commitment for the remaining items. (Findings 231-234)

Environmental Qualification of Equipment

Governor Brown asserts that the emergency operating procedures for the operators at Diablo Canyon are inadequate because they do not contain notations as to the capability of instruments which might be relied on in the event of an emergency. The Governor fears that in an emergency an operator may be instructed to rely on equipment which might not be available and that the operator is not specifically instructed as to the possible unavailability of such equipment due to its qualification status. The Applicant has recognized this problem and is in the process of assuring that its operators are aware of which instruments mentioned in its revised and expanded emergency operating procedures may not be available due to lack of qualification. (Findings 235-239)

The Staff's criteria for determining whether or not instruments should be environmentally qualified includes consideration of the effects of qualification or lack of it on operators. Equipment may remain unqualified for harsh environments if, among other things, its failure will not impact safety related functions or mislead an operator. The criteria for determining whether equipment should be environmentally qualified as listed in the Staff SER Supplement 15 for

Diablo Canyon appear reasonable. We conclude that comprehensive environmental qualification of equipment, which was one of the alternatives stated by Governor Brown, is not warranted. (Findings 240, 241)

The remaining issue, therefore, appears to be whether or not asterisks to identify non-qualified equipment should appear in the emergency operating procedures of the Applicant. If they do, they would supplement actions already being taken by the Applicant to assure that its operators are aware of equipment lacking environmental qualification which might be relied upon in an emergency. We conclude that the issue is insignificant in view of the planned actions and the qualification criteria, and we decline to order that asterisks be placed next to environmentally unqualified equipment in the emergency plan since this would add practically nothing to safety. (Finding 242)

Adequate capability exists for assessing significance of any radiological release from Diablo Canyon and for monitoring such releases. The Board concludes that the Applicant and the County have made adequate provisions for accident assessment under Planning Standard 50.47b(9) and the criteria of Part I of NUREG-0654.

Planning Standard b(10): Protective Actions^{18/}

The Applicant's emergency plan, in regard to a range of protective responses as well as guidelines for a choice of protective actions consistent with Federal Guidance and protective actions for ingestion exposure pathway EPZ, fully satisfies the planning standard and evaluation criteria for Planning Standard b(10) of 10 CFR § 50.47. Based on a review of the FEMA findings, the emergency plans meet the requirements of Planning Standard b(10). The plans are clearly adequate and capable of being implemented. (Findings 246-260)

The principal challenge to this planning standard came from Joint Intervenors' technical witnesses who disputed the accuracy of evacuation time estimates that had been determined by two different contractors of the Applicant. The basis for the attack was that the contractor studies had not utilized sufficiently conservative assumptions in deriving their estimates. The conservative assumptions urged by Intervenors were designed to show how the evacuation plan could fail if the worst events were to take place. (Finding 258)

^{18/} Planning Standard b(10) states: A range of protective actions have been developed for the plume exposure pathway EPZ for emergency workers and the public. Guidelines for the choice of protective actions during an emergency, consistent with Federal Guidance, are developed and in place, and protective actions for the ingestion exposure pathway EPZ appropriate to the locale have been developed.

The evacuation time estimates, however, are needed to plan for traffic control and to aid in the decision to advise sheltering or evacuation in an emergency. Conservative assumptions do not aid these goals. The time estimates must be realistic since wrong decisions concerning evacuation might be made if based on overly conservative estimates. While it is useful to probe the existing estimates to determine how the plan might fail, we conclude that this is a poor basis for creating the plan. The time estimates were derived over a realistic range of conditions and degrees of traffic control. This will be an aid to decision making in an emergency. Decision makers are not left without options, if conditions appreciably worse than those assumed in the evacuation plan prevail at the time of an emergency. The Board concludes that evacuation time estimates were derived that are consistent with Appendix 4 of NUREG-0654 and that they realistically cope with a range of likely conditions that might occur during an emergency. (Findings 259, 260)

The Board finds that the evacuation time estimates were done properly and that the Applicant's and San Luis Obispo County's emergency plan is in conformance with 10 CFR 50.47 b(10) and the criteria of Part J of NUREG-0654.

Planning Standard b(11): Radiological Exposure Control^{19/}

The record shows that the Applicant has established a program while, together with those of San Luis Obispo County and the State of California, provide the means for controlling radiological exposures of emergency workers. They conform fully with the standards set forth in 10 CFR 50.47 b(11). The implementing programs include guidelines consistent with EPA Emergency Worker and Lifesaving Activity Protective Action Guides. The standards of 10 CFR 50.47 b(11) have been fully met. (Findings 262-266)

^{19/} Planning Standard b(11) states: Means for controlling radiological exposures, in an emergency, are established for emergency workers. The means for controlling radiological exposures shall include exposure guidelines consistent with EPA Emergency Worker and Lifesaving Activity Protective Action Guides.

Planning Standard b(12): Medical and Public Health Support^{20/}

The Board concludes that there is reasonable assurance that contaminated injured individuals either on or off the site can be properly treated in either primary receiving or backup hospitals in an emergency. The number of ambulances available for transporting individuals is reasonable and the persons who would treat contaminated injured individuals are reasonably prepared. French Hospital, which would be the local primary receiving hospital, has prepared an extensive emergency plan, and the Board concludes that it is prepared for treatment of such injuries. (Findings 268, 270-273)

FEMA has found the status of offsite preparedness under this standard to be satisfactory. (Finding 280)

Joint Intervenors have criticized preparation for this planning standard on the basis that the number of ambulances and the number of physicians available for treating contaminated injured individuals is not adequate in the event of a major radiological emergency at Diablo Canyon. Their reasoning appears to be based on the hypothesis that radiation contamination of otherwise uninjured individuals requires emergency transportation and prompt treatment at a hospital. Our

^{20/} Planning Standard b(12) states: Arrangements are made for medical services for contaminated injured individuals.

record, however, shows otherwise. The appropriate remedy for personal contamination with radioactive material is decontamination. This does not require the emergency services of a physician. Decontamination centers have been prescribed by both the State and County in their plans. Individuals will be able to go to these centers for radiological survey and decontamination if needed and there would be no need for them to be transported to a hospital on an emergency basis. (Findings 275, 279, 282)

The medical problem which this plan addresses is that of the physically injured individual who is also contaminated. There is no reason to believe that there would be large numbers of physically injured contaminated individuals offsite in the event of an emergency and, therefore, the facilities which normally serve the County would be expected to serve its emergency needs during a radiological emergency. In view of the foregoing, we see no value to conducting offsite drills to transport persons to a hospital. (Findings 275, 278)

The Applicant's witnesses were unable to estimate how many injuries might occur onsite in an emergency. We conclude, based on the inconclusive testimony, that such an estimate would be too speculative to be of significant aid in planning. We conclude, however, that the availability of 10 to 12 ambulances in addition to supplementary helicopter service and the availability of physicians creates reasonable assurance that individuals injured and contaminated

at the plant during a radiological emergency could receive prompt transport and treatment for their injuries. (Findings 270, 271, 273, 277)

Our record does not address the listing of the integrated public health and medical treatment facilities existent in the County as prescribed in Footnote 1 of Part L of NUREG-0654. We have no way of assessing the significance of this requirement, and we recommend that the Staff investigate the significance and the degree of compliance by the State and local agencies in the Diablo Canyon area and that it assure itself of an appropriate resolution. We also recommend that the Staff assure that the State has conducted an appropriate assessment of other hospitals as required by Criterion L(3) of NUREG-0654. (Finding 281, 283)

With the exceptions noted the Board concludes that the planning organizations (Applicant, County and State) are in compliance with 50.47 (b)12 and the criteria of Part L of NUREG-0654.

Planning Standard b(13): Recovery and Reentry Planning and
Postaccident Operation^{21/}

This planning standard calls for general plans on the part of the Applicant, the County and the State for conducting reentry and recovery operations in the event of a radiological accident at Diablo Canyon. Each organization has developed general plans and procedures for reentry and recovery and has described generally the means by which decisions to relax protective measures will be reached. The Licensee has specified individuals by position and title who have authority and responsibility in the facility recovery organization. The Licensee's organization includes technical people with responsibilities to develop and evaluate recovery and reentry operations. (Findings 287-292)

The Licensee and the State have adequate means for informing members of response organizations that a recovery operation is to be initiated and of the changes in organizational structures that may occur. Adequate means for continuing population dose assessment exist as part of the overall emergency response capability. (Findings 290, 291)

^{21/} Planning Standard b(13) states: General Plans for recovery and reentry are developed.

Joint Intervenors objected that neither the Applicant nor the State have estimated or provided for possible costs of reentry and recovery in their emergency plan. No such estimates or provisions are required in either NRC regulations or NUREG-0654. No such requirement should be imposed since such cost estimates would not be relevant to public health and safety. (Joint Intervenors Proposed Findings, p. 578; Finding 297)

Even though the criteria of Part M of NUREG-0654 are intended to be general, we conclude that the State of California plan for recovery and reentry is minimally adequate in technical content considering the State lead responsibility. In particular, this applies to specifications of radiological criteria by which decisions to allow reentry into an evacuated area are reached. However, based on the fact that recovery and reentry operations do not deal with immediate life threatening situations and that assistance from Federal agencies such as EPA and DOE would be available, we conclude that there is no danger to public health and safety created. The Staff, however, should assure itself, in consultation with FEMA, that the State plan contains a substantive radiological criteria for allowing reentry into an evacuated area. (Findings 292-295)

We have reasonable assurance that a recovery and reentry operation could and would be undertaken in the aftermath of a possible radiological accident at Diablo Canyon. (Finding 298) The Board

concludes that the principal emergency response organizations (Applicant, State and County) have met the generalized planning criteria of 10 CFR 50.47 and Section M of NUREG-0654.

Planning Standard b(14): Exercises and Drills^{22/}

The Applicant, San Luis Obispo County and the State of California have prepared plans for the conduct of periodic emergency exercises and drills. One cycle of exercises and drills was completed in 1981 and specific plans were formulated for the conduct of another such cycle in 1982. (Findings 301, 308, 318)

An integrated full-scale emergency exercise was conducted at Diablo Canyon on August 19, 1981. The simulated accident which formed the scenario for the exercise began with an unusual event situation which became progressively more serious until a general emergency was declared. The simulated accident required the mobilization of the Applicant's Emergency Response Organization as well as that of the County and of the State. The goals of the exercise were (1) to demonstrate a capability to respond to a developing emergency situation, (2) to serve as a training device and (3) to highlight potential problem areas to be corrected. (Findings 301, 302)

Several elements important to the overall emergency response were not observed during the 1981 exercise because necessary equipment was not available at the time. Items not tested include the siren system,

^{22/} Planning Standard b(14) states: Periodic exercises are (will be) conducted to evaluate major portions of emergency response capabilities, periodic drills are (will be) conducted to develop and maintain key skills and deficiencies identified as a result of exercises or drills are (will be) corrected.

the monitor receivers for hospitals and schools, the emergency broadcast communications link, and the set-up of the unified dose assessment center. FEMA has indicated an intent to test and observe these elements as the equipment is installed. The Board anticipates that these elements will be tested in the 1982 exercise as well.

(Finding 307)

Joint Intervenors perceptions of deficiency in the 1981 exercise rested principally on items they think should have been included but were not. In many cases the items that they identified constitute no more than a difference of opinion with the planners of the exercise as to what should have been included. The Board rejects assertions of Joint Intervenors which rest on unsupported differences of opinion since we found no evidence to show that these would enhance the goals of the exercise or provide a more adequate demonstration of capability than was actually obtained. (Finding 313)

Joint Intervenors feel that the exercise was faulty because general public evacuation was not included. However, NRC regulations state that the emergency exercise is to be carried out without mandatory public participation. We therefore find it necessary to reject all assertions either stating or implying that the exercise was defective because an actual evacuation was not ordered. (Finding 311)

Joint Intervenors felt that the emergency exercise was defective because the early warning siren system was not available and that no backup means of notification was used. All parties agreed that testing of the emergency siren system prior to plant operation is vital. It was not installed at the time of the 1981 exercise. There is adequate assurance that the siren system is now installed and will be tested during the summer of 1982. (Finding 307)

Section N of NUREG-0654 suggests that the scenario for emergency exercises should be changed from year to year such that all major elements of the plans and preparedness organizations are tested within a five-year period. We, therefore, do not take the lack of participation of several cities within the State BEPZ in the first exercise to be a serious defect in the planning for that exercise. We have noted that some cities' SOP's were not complete at the time of the exercise but were expected to be completed within the following year. We think it advisable for cities in the State BEPZ to take part in exercises in future years; however, we conclude that this is within the jurisdiction of the State to direct. (Finding 312)

We conclude that there is little to be gained by merely assuming adverse weather in an exercise as advocated by Joint Intervenors. NUREG-0654, Section N.1.B, however, suggests that some exercises be conducted during adverse weather. The same section also suggests that

some exercises should be unannounced and it should not, therefore, be difficult to devise an exercise in the future to be conducted during an actual episode of adverse weather. (Finding 314)

The FEMA evaluation findings for the August 19 exercise show that numerous detailed suggestions for improvement of emergency plans were made by exercise evaluators and observers. The number and detail of items identified indicates that the observers and evaluators performed their tasks diligently. FEMA advised the participants, both in debriefing sessions and in its formal evaluation findings, of the nature of the defects found. A schedule has been set for their correction. The Board concludes that this process worked properly and that it provides reasonable means for the discovery and correction of deficiencies in onsite and offsite emergency plans. (Findings 303, 304, 307)

The Board concludes that the 1981 emergency exercise reasonably tested the Applicant's and the local and State organization's capability for responding to an emergency at Diablo Canyon. The exercise provided training through experience for its participants and it provided an opportunity for the discovery of defects in planning and performance of individuals and organizations. On the basis of this performance and plans for future exercises, the Board finds there is reasonable assurance that meaningful exercises and drills can and will

be performed to demonstrate the overall capability of responding to an accident at Diablo Canyon. We conclude that the Applicant and offsite organizations are in compliance with Part 50.47 and the criteria of Part N of NUREG-0654.

Planning Standard b(15): Radiological Emergency Response Training^{23/}

The Applicant's Emergency Plan, the State Emergency Plan and the County Plan provide adequate assurance that appropriate personnel both onsite and offsite have been and will be trained in radiological emergency response procedures and methods. Many personnel have received training. These include Applicant's employees who have received training in emergency procedures and radiological response onsite. It also includes offsite emergency workers such as fire and police, California Department of Forestry and California Highway Patrol personnel. Medical personnel have received specialized training in radiological procedures. Personnel who would be a part of a radiological response have or will receive adequate training to enable them to perform their roles during an emergency. (Findings 321-325, 327, 328)

FEMA has found that planning for the second annual cycle of drills and exercises is necessary under this standard. The required planning is under development and FEMA will verify completion. (Finding 333)

Joint Intervenors asserted that the Corporate Emergency Response Plan should provide more specific information on training programs

^{23/} Planning Standard b(15) states: Radiological emergency response training is provided to those who may be called on to assist in an emergency.

involving corporate emergency personnel. The Applicant revised its procedures to provide the information and the Staff reviewed it and found it adequate. The Board finds that this adequately resolved the issue. (Finding 329)

Joint Intervenors suggested that persons performing general emergency support roles such as auto repair, phone assistance, EBS personnel and other workers should have some form of radiological response training since they might be required to stay behind to perform their functions during an evacuation. None of the planning documents that we have before us prescribes any kind of specialized training for these workers and none of the emergency planning requirements of the NRC require it. The Board concludes that this is reasonable since we have no evidence that such workers would be exposed to an especially hazardous environment or that they could not rely on the monitoring which would be done by trained people in the event of an emergency. (Findings 330, 331)

There is no evidence that general support workers would or could be required to remain behind indefinitely during an evacuation. Emergency services of general workers would be needed primarily for the period during an evacuation and we presume that when the evacuation neared completion, they would evacuate along with the general population. The County plan treats these persons as though they were members of the general population. They will receive the same

instructions that the general public receives in the public education program. We conclude that this is adequate in view of the nature of their duties and the lack of evidence that they would be exposed to more hazards than the general public. (Findings 331, 332)

The Board concludes that the plans of the Applicant, San Luis Obispo County and the State of California are adequate to ensure that emergency response workers will be adequately trained in radiological emergency procedures. We find that the requirements of 10 CFR 50.47 b(15) and the criteria of Part 0 of NUREG-0654 are met by the principal response organizations having training responsibility for emergencies at Diablo Canyon.

Planning Standard b(16): Responsibility for the Planning Effort:
Development of Periodic Review and
Distribution of Emergency Plans^{24/}

The Board concludes that responsibilities for plan development and review and for distribution have been established by the applicant and San Luis Obispo County. Training for emergency planners is being provided. The Board, therefore, finds that for all uncontested aspects of this standard there exists adequate documentation and planning. (Findings 337-341)

Joint Intervenors raised a number of issues based on their Exhibit 120 which consists of answers to interrogatories prepared by the Applicant in September 1981. These issues include: The fact that at the time the answers were prepared the Applicant had not designated an overall Emergency Planning Coordinator; that training requirements for emergency planners had not been specified; and that the method for conducting an independent annual review of emergency plans was inadequate and might not conform to the requirements of Part P of NUREG-0654. The Applicant, however, subsequently revised its corporate emergency response procedure implementing plans to remedy these deficiencies. The Staff reviewed each revision and found it adequate. (Findings 342-344)

^{24/} Planning Standard b(16) states: Responsibilities for plan development and review and for distribution of emergency plans are established, and planners are properly trained.

Joint Intervenors objected that the County Board of Supervisors for San Luis Obispo County has not committed to pay for necessary efforts for maintenance and continued development and training required by this standard. This was not contradicted in testimony. However, the Applicant testified that it has made a commitment to assure that the funds necessary to maintain preparedness are available. The Board finds this an adequate resolution. (Finding 345)

FEMA found that offsite preparedness under this planning standard was adequate and had no recommendations to make. (Finding 346)

The Board concludes that the responsibility for the planning effort is adequately assigned and that planning meets the requirements of 10 CFR 50.47b(16) and the criteria of Part 0 of NUREG-0654.

Contention 10: Pressurizer Heaters^{25/ 26/}

The pressurizer heaters are, in fact, classified as components important to safety, and comply with the requirements of that designation. It was pointed out by the Joint Intervenors that between the submission of the original contention and the time of the hearings, the definitions of "important to safety" and "safety grade" had been changed, and that the intent of the contention was that the pressurizer heaters should be safety grade, which requires the stringent criteria set out in the contention to be applied to the system. All parties agreed that that was the clear intent of the contention, and it was, therefore, litigated with the words "safety grade" substituted for "components important to safety". (Finding 349)

25/ Contention 10, as originally submitted by Joint Intervenors for litigation in the low-power proceedings, was disallowed by the Board. The Commission subsequently directed the Board to accept the contention for the full-power hearings (CLI-81-2, September 21, 1981). The Board complied in its Order of September 30, 1981.

26/ Contention 10, as litigated, reads as follows: The Staff recognizes the pressurizer heaters and associated controls are necessary to maintain natural circulation at hot stand-by conditions. Therefore, this equipment should be classified as "components important to safety" and required to meet applicable safety grade design criteria, including but not limited to diversity (GDC 22), seismic and environmental qualification (GDC 2 and 4), automatic initiation (GDC 20), separation and independence (GDC 3 and 22), quality assurance (GDC 1), adequate reliable on-site power supplies (GDC 17) and the single failure criterion. The Applicant's proposal to connect two out of four emergency power supplies does not provide an equivalent acceptable level of protection. (Finding 348)

In consideration of this contention, we need not discuss the specific criteria to be met by the system. The question presented to the Board is whether either a Commission requirement or Section III.(c) of Appendix A to 10 CFR Part 100 mandates that the pressurizer heaters meet the more stringent safety-grade criteria.

We first turn to the determination of whether the safety-grade qualification of the pressurizer heaters is required by the Commission. In the aftermath of the Three Mile Island investigation, the NRR Lessons Learned Task Force recommended to the Commission in NUREG-0578 that the pressurizer heaters be safety grade, as the system could not be maintained in a hot standby condition if they were not available. In NUREG-0737, the Commission decided which of the many recommendations of the NRR Lessons Learned Task Force would be adopted. Item II.E.3.1 of NUREG-0737 specifically addresses pressurizer heaters: they are classified as non-class I-E loads, and thus not required to meet safety grade design criteria. (Finding 351) The only requirement is that they be set up so that, in the event of loss of offsite power, they can be energized by the emergency power source. The Board can come to no other conclusion than that the Commission considered the question before us and decided that design and fabrication of the pressurizer heaters and associated controls to safety-grade criteria were not necessary.

We turn now to the requirements of Section III(c) of Appendix A to 10 CFR Part 100. That section states the requirements for the imposition of safety-grade criteria in structures, systems and components for safe shutdown earthquakes. The components affected are those necessary to assure:

- (1) The integrity of the reactor coolant pressure boundary;
- (2) The capability to shut down the reactor and maintain it in a safe shutdown condition; or
- (3) The capability to prevent or mitigate the consequences of accidents which could result in a potential offsite exposure comparable to the guideline exposure of 10 CFR Part 100. (Finding 352)

The sole function of the pressurizer heaters is to aid in controlling the pressure in the primary coolant system. The pressurizer heaters act to increase the pressure; the pressurizer sprays act to lower pressure. (Finding 353) Thus, the pressurizer heaters clearly do not serve to protect the integrity of the reactor coolant pressure boundary.

There was some conflict between the testimony of Staff and Applicant as to whether a hot standby condition^{27/} could be maintained without the use of the pressurizer heaters, but we find this to be irrelevant to

^{27/} Hot standby is defined in NUREG-0452, Rev. 2, as the condition for which the core is subcritical by at least 1% in reactivity and the coolant temperature is at or above 350°F. (Finding 357)

compliance with the second category of components in Appendix A. The requirement is for the capability to shut down the reactor and maintain it in a safe shutdown condition. Hot standby is an operational convenience condition, not a safety one. (Finding 354) Reactor pressure, as necessary for a safe shutdown, can be maintained by the reactor charging pumps, which are safety grade. (Findings 355, 356)

The remaining question is whether the pressurizer heaters are necessary to prevent or mitigate the consequences of accidents which could result in potential offsite exposures comparable to the guideline exposures of 10 CFR Part 100. The only situation identified by the parties which might relate pressurizer heaters to prevention or mitigation of an accident was maintenance of natural circulation, if needed, in the primary system. The Intervenors contended that the Three Mile Island experience showed that pressurizer heaters must be available to maintain enough pressure in the system to avoid steam blocking and a resultant lack of core heat removal.

Both Applicant and Staff point out that the Westinghouse system at Diablo Canyon and the Babcock and Wilcox system at Three Mile Island differed in vital ways. The Applicant testified that pressure in the system could be maintained by the charging system, which is safety grade, arguing that the point was supported by a test on the Sequoyah plant, which is essentially identical to the Diablo Canyon plant. The Staff maintains that the U-tube steam generators used in the Diablo Canyon system are basically different from the "candy cane" steam generators in the Three Mile Island

system, and that because the high point of the primary system (the steam generators) is continually covered with secondary coolant, any steam that is formed would be condensed by the steam generators and natural circulation would be maintained. The water-level maintenance system at Diablo Canyon is safety grade. (Findings 356, 358)

The Board finds the arguments by Staff and Applicant persuasive. We agree with Intervenors that until the appropriate tests, such as those done on the Sequoyah system, are performed at Diablo Canyon, the Applicant's position cannot be corroborated completely, but we do find that there is reasonable assurance that it will be possible to maintain natural circulation, using safety-grade systems as needed, without the use of the pressurizer heaters. Consequently, we find that pressurizers heaters need only meet the less stringent "important to safety" criteria.

Although Intervenors presented no testimony on the adequacy of connecting only two of the four heater banks to the emergency power supply, the Staff noted that the NUREG-0737 requirement for having the pressurizer heaters available during loss of offsite power was for the purpose of preventing a possible challenge to the emergency core cooling system. The Staff has analyzed the power needed to accomplish this end, and has concluded that operation of two of the heater banks is adequate for the purpose. This evidence is adequate to refute Intervenor's otherwise unsupported allegation. (Finding 359)

The Board, therefore, finds on the basis of the entire record relevant to this matter, that the qualification of the pressurizer heaters as safety grade is not required either by the Commission or by the criteria of Appendix A of 10 CFR Part 100, and that connecting only one-half of the heater banks to the emergency power supply is adequate for the purpose intended.

Contention 12: Block and Power-Operated Relief Valves^{28/ 29/}

28/ As with Contention 10, this contention was originally disallowed by the Board, and was reinstated by direction of the Commission.

29/ Contention 12, as admitted by the Board in its Order of September 30, 1981 states:

Proper operation of power-operated relief valves, associated block valves and the instruments and controls for these valves is essential to mitigate the consequences of accidents. In addition, their failure can cause or aggravate a LOCA. Therefore, these valves must be classified as components important to safety and required to meet all safety-grade design criteria.

Relief and Block Valves. Joint Intervenors contend that the present classification of Diablo Canyon relief valves and associated block valves, instruments and controls does not comply with 10 CFR Part 50, Appendix A, Reg. Guide 1.26 and SRP (Reg. Guide 1.70), Section 3.22. Joint Intervenors also contend that General Design Criteria 1, 14, 15 and 30 are violated because relief and block valves have not been qualified under all transient and accident conditions.

Proper operation of power operated relief valves, associated block valves and the instruments and control for these valves is essential to mitigate the consequences of accidents. The TMI accident demonstrated this fact. In addition, their failure can cause or aggravate a LOCA. Therefore, these valves must be classified as important to safety and required to meet all safety-grade design criteria. However, the Diablo Canyon block and relief valves do not meet all safety-grade design criteria, in violation of the regulatory practices listed above. In addition, reactor coolant system relief valves form part of the reactor coolant system pressure boundary. When relief valve operation is unreliable, series block valves are relied upon to maintain the integrity of the pressure boundary. Despite these important safety functions, appropriate qualification testing has not been done to verify the capabilities of these block valves to function during normal, transient and accident conditions. In the absence of such testing and verification, the public health and safety are endangered. (Finding 360)

All reactors operate with established limits on allowable pressure in the system. To assure that the limit is not exceeded, safety relief valves are provided. However, even in the course of normal operation, some mild pressure transients occur. If as a result of one of these transients a safety relief valve should open and fail to close after the passage of the transient pressure surge, a difficult operational problem would be presented. The safety valves cannot be blocked off for maintenance, as this could compromise their availability, and it is thus possible that the system pressure would have to be reduced to atmospheric pressure to close the valve.

To preclude this possibility, power operated relief valves (PORV's) are provided in the system. These valves are set such that they will open at some pressure lower than the set point of the safety relief valves. Inasmuch as they do not perform the ultimate safety function of the safety relief valves, they can be isolated from the system in case they should not close after opening. This ability is provided by block valves which are mounted upstream of the PORV's. (Finding 363)

Three PORV's are provided in each Diablo Canyon system. Only one is needed to provide the intended pressure relief function. Another is provided for redundancy, and for the performance of the only safety-related function required of the PORV's, which we will discuss, infra. These valves, their associated block valves and their

instrumentation and controls are qualified to safety-grade standards. The third PORV has no safety-related function, but has been provided to allow full load rejection without the necessity of reactor trip. It is identical to the other valves and its associated block valve is safety grade. However, the instrumentation and controls are not safety grade inasmuch as the valve is not provided with an independent pneumatic power activator. (Finding 364) This lack could affect its ability to open under some conditions, e.g., loss of all electric power, but does not affect its ability to close. (Finding 365)

The Electric Power Research Institute has conducted a wide-ranging program of tests on the field capability of pressure relief valves. Valves representative of those used in the Diablo Canyon plant were included. The PORV representative of those used at Diablo Canyon was tested under full-pressure steam, water, transition phase and loop seal conditions. The valve passed all test criteria. (Finding 366) The representative block valve was tested under conditions representative of those expected at Diablo Canyon and fully opened and closed upon demand. (Finding 367) Results of these tests are expected to be documented formally by July 1982. The Applicant will then submit plant-specific reports to the NRC for determination of applicability of the tests to the Diablo Canyon plant. (Finding 368)

The valves had been seismically qualified according to the criteria in place before institution of the ongoing seismic

reverification program. The Applicant is reviewing this qualification and has committed itself to whatever steps are necessary to maintain seismic qualification of the valves. (Finding 369)

The Board finds from the above facts that there is more than reasonable assurance that the valves will operate as projected. However, even if a PORV malfunctioned and failed to close, thus causing the equivalent of a small-break LOCA, it would be isolated by its associated block valve. (Finding 370) If then the block valve failed to close and isolate the PORV, the capability of the ECCS would be sufficient to permit safe shutdown of the reactor without the core being uncovered and damaged. (Finding 371)

No evidence was presented which would indicate that proper operation of the PORV's was required to shut down the reactor and maintain the system in a safe shutdown condition. The use of PORV's and block valves in the shutdown process is mentioned in a number of emergency operating procedures; however, the procedures are designed to assure that the operator makes maximum use of all the systems available to him, whether they are safety grade or not. (Finding 372)

Proper operation of the PORV's and block valves is not required to mitigate the consequences of any of the design basis accidents considered in the FSAR. (Finding 373) The only safety-related function of the PORV's which was brought out in testimony is that of

protection against low-temperature pressure transients, such as could be encountered during startup from a cold condition. In this situation, it is important that the vessel is protected until its temperature exceeds its nil ductility transition temperature. The safety valves, which supply protection during operation, are set too high to perform the function at low temperatures. The two safety-grade PORV's, which can easily be set to relieve pressure at low values, perform this function. The operators are trained to use the safety-grade PORV's in this situation. (Finding 374)

The Board finds, on the basis of the entire record relevant to this matter, that the PORV's and their associated block valves and instrumentation and controls are not required, with one single exception, by the criteria in Section III.C of appendix A to 10 CFR Part 100 to be qualified as safety grade. The exception, that of protection from low-temperature overpressurization, is adequately provided for by two safety-grade PORV systems. The Board further finds that the PORV systems have been adequately designed, constructed and tested.

IV. CONCLUSIONS

A. The Board concluded, on the basis of all of the testimony and exhibits in the record, that the Applicant's and the combined on-site, State and local emergency response plans and preparedness comply with 10 CFR 50.33(g); 50.47 and revised Appendix E to Part 50.

The Board also concluded that Governor Brown, as Intervenor for the State of California, and the Joint Intervenors failed to prove that changes are required in the classification of pressurizer heaters, block valves or PORV's.

B. (1) All other issues or contentions presented by the parties, but not addressed in this Decision, have been considered and found to be without merit.

(2) Findings of Fact and Conclusions of Law are attached hereto and incorporated herein by reference as if set forth at length.

V. FINDINGS OF FACT

A. In the matter of:

Pacific Gas and Electric Company

(Diablo Canyon Nuclear Power

Plant, Units 1 and 2)

Docket Nos. 50-275 OL

50-323 OL

B. Jurisdiction and Parties

The notice of hearing in this case was issued on January 25, 1974. The question presented was the licensing of a utilization facility under the Atomic Energy Act of 1954, as amended, the National Environmental Policy Act of 1969 (NEPA) and regulations promulgated and set out in 10 CFR Part 50.

The Parties to this proceeding are (1) Pacific Gas and Electric Company (Applicant), (2) the NRC Staff, (3) the San Luis Obispo Mothers for Peace, Scenic Shoreline Preservation Conference, Inc., Ecology Action Club, Sandra Silver, Gordon Silver, Elizabeth Apfelberg, and John J. Forster ("Joint Intervenors"), and (4) Governor Brown for the State of California.

The subject matter of this proceeding is the granting of a full-power operating license for the operation of the Diablo Canyon Nuclear Power Plant, Units 1 and 2, at San Luis Obispo, California.

C. Procedural History

Earlier partial initial decisions have disposed of all issues save the three that are presently being adjudicated in this full-power operating license proceeding. The record shows that the low-power testing license has been suspended by the Commission and that the Applicant, at the direction of the Commission, has instituted an independent reverification program as to the adequacy of the quality assurance program used in building the plant. The Board has set out a caveat in this Decision pointing out that only the Commission can place this Decision into effect.

VI. FINDINGS OF FACT ON INDIVIDUAL ISSUES

A. Contention 1 - Emergency Planning

Contention 1, as admitted by the Board in its Order of August 4, 1981, reads as follows:

PG&E and the combined onsite, state and local emergency response plans and preparedness do not comply with 10 CFR 50.33(g); 50.47 and revised Appendix E to Part 50.

The instant issues at bar are both extremely broad and complex. In order to present the resolution of these issues in an orderly fashion, the Board has considered them, seriatim, first as to compliance with 10 CFR 50.33(g) and then in the context of the planning standards as set forth in 10 CFR 50.47(b).

Planning Standard b(1): Assignment of Responsibility

1. Planning Standard b(1) states: Primary responsibilities for emergency response by the nuclear facility licensee, and by State and local organizations within the Emergency Planning Zones (EPZ's) have been assigned, the emergency responsibilities of the various supporting organizations have been specifically established, and each principal response organization has staff to respond and to augment its initial response on a continuous basis.

2. This planning standard was addressed in the submitted written testimony of Applicant Panel No. 1 Testimony ff. Tr. 11778, pp. 1-1 to 1-2, as modified and amended by Mr. S. M. Skidmore, regarding the adequacy of State planning (Tr. 12782) and in the testimony of Mr. J. R. Sears of the NRC Staff (Sears testimony ff. Tr. 12638, pp. 2-7). Governor Brown did not submit written testimony but did conduct cross-examination of the Applicant and NRC witnesses. Joint Intervenors submitted the testimony of Drs. Kai T. Erickson and James Johnson which dealt in part with requirements of this standard.

3. The Applicant has established an emergency response organization for coping with radiological emergencies within the plume exposure pathway EPZ and the State Basic Emergency Planning Zone (BEPZ). The responsibilities, authorities and duties of the personnel assigned to Applicant's emergency response organization have been set

forth in the Applicant's emergency plan (Applicant Ex. 73), Corporate Emergency Response Plan and Implementing Procedures. (Applicant Panel No. 1 Testimony ff. Tr. 11778, pp. 1-1, 1-2, and Attach. 6; Sears Testimony ff. Tr. 12638, p. 2; Applicant Exs. 75, 75A, 77)

4. The Federal Emergency Management Agency (FEMA) made no recommendations for correction or improvement of offsite planning for this standard in its findings. (Applicant Panel No. 1 Testimony ff. Tr. 1778, Attach. 2)

5. Joint Intervenors assert that (1) there is no evidence of emergency planning in Santa Barbara, Monterey or Ventura Counties; (2) State and local plans contain no letters of agreement; (3) standard operating procedures are not complete; (4) Santa Barbara County Plan is not in compliance with applicable regulations; (6) none of the affected local jurisdictions have signed off or approved the San Luis Obispo County Plan; and (7) emergency workers might be unavailable because of role conflicts. (Joint Intervenors Proposed Findings, PP. 29-30, 34-35; Brown Proposed Findings, p. 46)

Onsite Preparedness

6. In the event of a radiological emergency an onsite emergency organization will be established. The onsite emergency organization will be staffed on an interim basis with personnel who are immediately available on the site at the time of the emergency. Additional plant

personnel off site and on site will be notified that their assistance is required. The long-term emergency organization will be staffed by plant personnel as they arrive at their designated emergency response facilities. (Applicant Panel No. 1 Testimony ff. Tr. 11778, Attach. 6; Sears Testimony ff. Tr. 12638, p. 2)

7. The shift foreman initially assumes the position as site emergency coordinator and is responsible for command and control of onsite emergency operations until relieved by a senior plant management person designated for the site emergency coordinator position. The shift foreman activates the site emergency plan operations. (Applicant Panel No. 1 Testimony ff. Tr. 11778, Attach. 6, p. 5-3; Sears Testimony ff. Tr. 13628, p. 5)

8. A corporate recovery manager exercises overall command of the Applicant's emergency response operations. He provides direction and support for in-plant emergency response actions to the site emergency coordinator. He also coordinates the emergency actions with government and coordinates headquarter support through the corporate incident response center. (Applicant Panel No. 1 Testimony ff. Tr. 11778, Attach. 6, p. 5-3)

9. The plant is staffed 24 hours per day seven days per week by a minimum shift operating crew of 13 individuals. The operating crew comprises the initial onsite emergency organization in the event of an

emergency. A liaison coordinator will notify the corporate recovery manager and other offsite agencies and organizations of an emergency. (Sears Testimony ff. Tr. 12638, p. 6)

10. The Applicant has established an emergency organization call list which provides primary and alternate personnel for each assignment in the long-term emergency organization. (Sears Testimony ff. Tr. 12638, p. 6)

11. Responsibilities for emergencies have been established for the following groups which are part of the onsite organization: site emergency coordinator; emergency liaison coordinator; liaison assistant; emergency maintenance coordinator; emergency evaluations and recovery coordinator; emergency radiological advisor; site chemistry and radiation protection coordinator; Emergency Assessment and Response System (EARS) operator; Technical Support Center (TSC) emergency radiological monitoring teams; operational support center (OSC) supervisor; emergency operations coordinator; emergency operations advisor; shift engineer; fire brigades; evacuation coordinator; evacuation teams; first-aid and medical teams; data processing; advisor to the County emergency organization; and technical advisor to the public information recovery manager. (Applicant Panel No. 1 Testimony ff. Tr. 11778, Attch. 6, Table 5.2-1; Sears Testimony ff. Tr. 12638, pp. 4, 5)

12. The Applicant has revised Appendix E-2 of Procedure 1.1 of the Corporate Emergency Response Plan to remedy a shortage of personnel which was pointed out by Joint Intervenors in their Exhibit 120. (Applicant Ex. 85, Rev. 2A, pp. 21-22; Skidmore, Tr. 12757-758) This issue raised by Joint Intervenors is adequately resolved.

13. Offsite organizations which will have a role in emergency response have been identified and written agreements between the Applicant and State, local, private and Federal organizations have been developed. (Applicant Panel No. 1 Testimony ff. Tr. 11776, pp. 1-2; Applicant Ex. 73, App. E; Sears Testimony ff. Tr. 12638, pp. 3-6)

14. The NRC Staff has reviewed Applicant's plan and procedures and concludes that they meet the criteria of NUREG-0654 II.A. (Sears Testimony ff. Tr. 12638, p. 7)

State and Local Responsibilities

15. Responsibilities for emergency actions are partitioned between the State and San Luis Obispo County such that major emergency responsibility is assigned to the County. The State has specific emergency responsibilities for the ingestion pathway EPZ and for establishing criteria for reentry and recovery of contaminated zones after an emergency. (Applicant Ex. 73, App. C, pp. 24-28; Eldridge, Tr. 12709-710)

16. The State of California has defined its EPZ's in a different and enlarged manner than that described in 10 CFR 50.47c(2). Although different from the Federally defined zones, the California EPZ's encompass the Federal zones. (Applicant Ex. 73, App. C, pp. 6-8)

17. The State of California considered NRC regulations in setting its EPZ's. It concluded that there was a need for specific planning for plume exposure beyond the 10-mile radius required by NRC. The State defined a BEPZ for Diablo Canyon which extends about 15 miles to include the cities of Morro Bay, San Luis Obispo, Baywood/Los Osos and the five cities area to the Southeast. (Applicant Ex. 73, App. C, pp. 6-8)

18. The State defined an extended EPZ for Diablo Canyon which goes out about 35 miles to the southeast (which is the predominant wind direction). (Applicant Ex. 73, App. C, pp. 7-8)

19. The State has defined a site-specific Ingestion Pathway Zone (IPZ) for Diablo Canyon. (Applicant Ex. 73, App. C, pp. 12-13)

20. The State of California choice of EPZ's surrounding Diablo Canyon was a reasonable exercise of its responsibility under 10 CFR 50.47 to establish emergency plans.

21. The California EPZ's are sufficiently different from the Federally defined zones (10 CFR 50.47 c(2)) that some confusion as to enforcement of the remainder of 10 CFR 50.47 requirements could arise. The requirements of Appendix E to Part 50 identify the requirements set forth as minimum requirements which must be met in attaining an acceptable state of emergency preparedness.

22. The Board will apply the "minimum requirement" standard in its review of emergency planning at Diablo Canyon. Emergency planning must comply with 10 CFR 50.47 and Appendix E as a minimum. Requirements of the State which go beyond these regulations for EPZ's are not prohibited; however, they are sufficiently different from the Federal requirements to be beyond the jurisdictional authority of this Board.

23. FEMA has not issued its findings on the adequacy of the State plan but expects plan completion and commencement of review in Mid-1982. FEMA is keeping abreast of the developments in the State plan and is participating with the State and San Luis Obispo County in the development of emergency plans. (Eldridge, Tr. 12706-712)

24. The State plan is in effect although incomplete as regards about 10 percent of its standard operating procedures. It is capable of implementation. The plan addresses the State's planned response for the IPZ and for recovery and reentry of contaminated areas which are

its areas of primary responsibility in an emergency. (Applicant Ex. 73, App. C, pp. 24-28; Eldridge, Tr. 12708-710)

25. San Luis Obispo County is the lead agency for developing and implementing local emergency response in the vicinity of Diablo Canyon. (Ness, Tr. 12460-462) The County will implement the State EPZ's. (Ness, Tr. 12518-519)

26. The County plan was approved conceptually by the County Board of Supervisors on January 18, 1982. The conceptual approval was not a final approval but indication that planning, while progressing satisfactorily, remained incomplete in some respects and was still subject to revision. (MacElvaine, Tr. 12239, 12242, 12249-250)

27. The San Luis Obispo County plan is incomplete with regard to: (1) completion of standard operating procedures for cities, fire districts and school districts that are outside of the Federal 10-mile plume exposure pathway zone but within the enlarged State BEPZ. (Ness, Tr. 12530, 12559-561); (2) incorporation of letters of agreement with government agencies or private businesses in the plan (Potter, Tr. 11804; Ness, Tr. 12457); and (3) authentication of the San Luis Obispo County plan by the other local jurisdictions. (MacElvaine, Tr. 12249)

28. The County emergency plan calls for 31 standard operating procedures (SOP's) to be prepared by cities, fire districts and school districts within the State BEPZ. Twenty-one of these SOP's prepared by organizations within the Federal plume EPZ are complete. The remainder of SOPs apply to organizations outside the 10-mile EPZ. These organizations will model their plans after the ones which have been completed. (Ness, Tr. 12453)

29. Joint Intervenors object that the SOP's are defective because none have received formal approval or have been signed off by various jurisdictions which are expected to implement the procedures. (Joint Intervenors Proposed Findings, p. 20)

30. Individual agency approval of standard operating procedures is not required. The County Board of Supervisors are ultimately responsible for approval of the SOP's, and have now given their conceptual approval of the present County plan. Each agency, for example, a city or sheriff's department, develops its own plan. The County staff works cooperatively with these organizations until some version is found agreeable. At this point, the County and the agencies consider it final and could implement it even though no final signature approval is provided. (Ness, Tr. 12528-12530)

31. Signature spaces are provided in the San Luis Obispo County Plan for the purpose of authentication by those who prepared the

individual SOP's and not to signify approval by some other reviewing authority. Since the SOP's are being revised in a continuous process (Ness, Tr. 12530), the Board finds it reasonable to defer the administrative act of authentication until later. The authentication of SOP's should take place prior to reactor operation at full power; however, the absence of authentication does not imply that approval has been withheld or that the individual SOPs are defective.

32. Joint Intervenors and Governor Brown argue that emergency planning in the vicinity of Diablo Canyon should include Santa Barbara County, Monterey County and Ventura County. (Joint Intervenors Proposed Findings, pp. 16-17, 20)

33. The borders of Santa Barbara County lie some 18 miles in a southeasterly direction from Diablo Canyon. The County is outside the Federally defined plume emergency pathway zone but within the IPZ. An emergency plan is not required of Santa Barbara County since the State of California has emergency responsibility for the ingestion pathway planning. (Eldridge Testimony ff. Tr. 12688, p. 16; Tr. 12721-723) Santa Barbara County contracted for preparation of a plan since it lies within the BEPZ as defined by the State. The plan is expected to be complete in July 1982. A plan appropriate for the plume emergency pathway zone is not required of Santa Barbara County by Federal standards. (Eldridge, Tr. 12723)

34. Portions of Monterey County and Ventura County are within the Federal and State ingestion pathway EPZ's. The State of California has principal responsibility for emergency planning within these zones. These Counties are, therefore, not required to prepare emergency plans of their own. (Applicant Ex. 73, App. C, p. 25; Eldridge, Tr. 12723; Skidmore, Tr. 11795, 11799)

Emergency Responsibilities of Supporting Organizations

35. Joint Intervenors view the County planning effort as incomplete because various letters of agreement have not yet been signed between the County and supporting organizations. (Joint Intervenors Proposed Findings, pp. 34, 35) No evidence of difficulty obtaining signatures on letters of agreement was brought forward at the hearing. Agreement letters are used for noncritical elements of emergency support. Critical elements are contained in County SOP's. The County is aware of the need for letters of agreement and plans to obtain them. (Ness, Tr. 12458)

36. The Board concludes that the County letters of agreement with supporting organizations are not critical to successful implementation of the emergency plan. They are, nevertheless, important, and as such the Staff should assure itself through consultation with FEMA that the effort to develop significant letters of agreement is concluded promptly.

Availability of Emergency Workers

37. The County has identified 1,173 emergency workers needed to implement the 21 County standard operating procedures which are in the 10-mile EPZ and which have been completed. (Ness, Tr. 12468)

38. Joint Intervenors assert that this planning standard might not be met because emergency workers might elect to assure the safety of their families in an emergency rather than perform their emergency duties. This possibility was termed role conflict by the Joint Intervenors' expert, Dr. Erickson. (Erickson Testimony ff. Tr. 12406, pp. 5-6)

39. Role conflict would not affect the performance of trained professionals such as officers of the California Highway Patrol, the County Sheriff, physicians, nurses and other medical personnel. (Id., p.7)

40. Role conflict could have an effect on the behavior of some volunteer workers during an emergency. (Mileti, Tr. 12264-265) We understand volunteers to mean general workers whose principal professions are not related primarily to public health and safety such as, for example, private contractors with bulldozers or tow trucks, gas station attendants, banks and others who might play a supporting role

but who would not have special emergency training. (Ness, Tr. 12471-473)

41. The Board accepts that role conflict is one of the problems that could arise during an emergency. However, we do not accept that the problem is of such dimension as to render the emergency plan unimplementable.

42. There is no necessary dichotomy respecting roles during an emergency. Supporting workers and trained professionals could verify the safety of their family and then report for duty. (Mileti, Tr. 12264-265)

43. Volunteer workers have noncritical (but useful) functions during an emergency. (Ness, Tr. 12458) Some defections in their ranks would not cause critical damage to plan implementation.

44. Experience from actual emergencies does not indicate that emergency workers fail to perform their duties during an emergency. (Erickson, Tr. 12425; Eldridge, Tr. 12730)

45. Training in emergency response and the nature of the hazards increases the reliability of the emergency workers and enables them to behave reasonably and responsibly in an emergency situation. (Eldridge, Tr. 12729-730) (We understand this to apply to the

professional classes of emergency workers since no special emergency training will be given the volunteer workers referred to above.)

46. A scientific sociological survey of emergency workers as advocated by Drs. Erickson and Johnson is not necessary to assure implementability of the emergency plans. Instructions given to emergency workers should address the question of how they will assure family safety in an emergency.

Planning Standard b(2) - Onsite Emergency Organization

47. Planning Standard b(2) states: Onshift facility licensee responsibilities for emergency response are unambiguously defined, adequate staffing to provide initial facility accident response in key functional areas is maintained at all times, timely augmentation of response capabilities is available, and the interfaces among various onsite response activities and offsite support and response activities are specified.

48. This planning standard was addressed in the submitted written testimony of Applicant Panel No. 1 Testimony ff. Tr. 11778, pp. 1-3, 1-4 and Mr. Sears of the NRC Staff (Sears Testimony ff. Tr. 12638, p. 7-13). Joint Intervenors and Governor Brown conducted cross-examination but did not submit written testimony.

49. Joint Intervenors state that the Applicant has failed to comply with this planning standard in several ways: (1) Staffing requirements set forth in Table B-1 cannot be evaluated from Sections 5.1.7, 5.2.1 and Table 5.2-1 of the Applicant's emergency plan; (2) Applicant has not prepared for the possibility that operators would leave the site during an emergency to care for their families and (3) Applicant does not comply with NUREG-0654 requirements to augment staff within 30 minutes during evenings and weekends. (Governor Brown joins in asserting the deficiency alleged in item 3.) Joint

Intervenors additional assertions concerning NUREG-0737 operating procedures and qualifications status of equipment are treated in our analysis of Planning Standard b(9) in this decision.

50. The onshift Diablo Canyon Power Plant personnel assignments and responsibilities are delineated in the Applicant's Emergency Plan. Plant staff emergency assignments are provided for all shifts. (Applicant Ex. 73, § 4; Sears Testimony ff. Tr. 12638, pp. 7-8)

51. The Applicant has designated an emergency coordinator who has the authority to direct emergency operations on site. The coordinator has the responsibility and authority to declare emergency action levels and recommend protective actions. (Applicant Panel No. 1 Testimony ff. Tr. 11778, Attach. 6, pp. 5-2, 5-3 and Table 5.2-1)

52. A line of succession for the emergency coordinator position has been established. (Id., p. 5-5)

53. Functional responsibilities for the emergency coordinator have been established. Those actions which cannot be delegated such as recommendations of protective actions to offsite authorities have been specified. (Id., Table 5.2-1)

54. Interfaces between onsite functional areas of emergency activity and Applicant's headquarters, local services and State and local governments have been specified and illustrated in a block diagram. (Sears Testimony ff. Tr. 12638, p. 9; Applicant Ex. 73, Figs. 5-2.2, 5-2.3)

55. Applicant's personnel who will augment plant staff in an emergency are specified. (Applicant Ex. 73, App. A, § 4)

56. Contractor and private organizations who could provide assistance in an emergency have been specified. (Applicant Ex. 73, App. E; Sears Testimony ff. Tr. 12638, pp. 3, 4, 10)

57. The services that offsite organizations would provide have been specified, agreements reached are appended to the plan and authorities and responsibilities of organizations are specified. (Applicant Ex. 73, App. E; Sears Testimony ff. Tr. 12638, p. 10)

58. The NRC staff has reviewed the Applicant's onsite emergency organization and has concluded that it is in compliance with the requirements of Planning Standard b(2). (Sears Testimony ff. Tr. 12638, p. 10)

Requirements of NUREG-0654 Table B-1)

59. Governor Brown and Joint Intervenors assert that the Applicant's emergency plan (Section 5) lacks sufficient information to allow evaluation of staffing requirements of Table B-1 of NUREG-0654.

60. The Staff reviewed the Applicant's plan, the Implementing Procedure, conducted a site visit and concluded that the plan and implementing procedures together contain adequate information to allow an evaluation of the staffing requirements required for Diablo Canyon. Differences between the plan and table B-1 are due to different titles of positions used by the Applicant. (Sears, Tr. 12660-662)

61. Joint Intervenors raised the question on cross-examination as to whether Applicant meets shift staffing requirements for licensed operators. (Tr. 11804) Four shifts are required to man the two units at Diablo Canyon around the clock. (Shiffer, Tr. 12773) Four licensed operators which include two senior operators and two licensed operators are required to operate a single unit of the plant at full power. For two-unit operation three senior licensed operators and three licensed operators are required to meet the minimum onshift staffing requirements. (Shiffer, Tr. 11804-805, 11815-816) The Applicant has 31 licensed personnel on site which includes 25 licensed operators and 6 licensed personnel who are not operators. (Shiffer, Tr. 11816) The Board concludes that the Applicant meets the shift manning requirements of Table B-1 of NUREG-0654.

62. Joint Intervenors assert that the Applicant is unable to meet Table B-1 requirements for staff augmentation on evenings or weekends. During a normal work day the Applicant can augment the onshift personnel at Diablo Canyon in approximately 10 minutes. For evenings or weekends it would take from 20 minutes to 45 minutes, possibly extending to one hour, to initially augment its onshift personnel. (Kaefer, Tr. 11827-828) The Applicant's ability to augment the staff with 11 people in 30 minutes as required in Table B-1 of NUREG-0654 is therefore somewhat deficient. The inability to meet this requirement is due to the fact of the remote location of the reactor site. (Sears Testimony ff. Tr. 12638, p. 9).

63. The NRC staff concluded that the Applicant's ability to augment its staff in an emergency is adequate. It based its review on the overall plan, the implementing procedures and site visits. (Sears Testimony ff. Tr. 12638, p. 9; Tr. 12662)

64. We reject Governor Brown's argument that site meteorological conditions and potential doses downwind require exact conformance to the guidance for augmentation in 30 minutes. (Brown Proposed Findings, p. 30) Protection of persons in the plume emergency pathway is to be accomplished by the siren early warning system which does not require staff augmentation to activate. (Applicant Ex. 74, Emergency Procedure G-2)

65. In view of the capabilities of the existing site staff to initiate emergency response, the ability to begin augmentation within 20 minutes and the remoteness of the site, we conclude that the NRC Staff's overall review and conclusion on plant staff augmentation is reasonable.

Role Conflicts Among Plant Workers

66. Joint Intervenors assert that plant workers might encounter the same role conflicts that were alleged for other emergency workers by Drs. Erickson and Johnson. They base their assertion on their exhibit which reports a rumor of such a possibility at TMI. (Joint Intervenors Ex. 119)

67. Dr. Erickson did not address role conflicts in plant workers directly but did state that role conflicts would not be expected to cause trained professionals to leave their posts. (Erickson Testimony ff. Tr. 12407, p. 7)

68. Mr. Eldridge concluded that emergency training allows people to take reasonable and responsible actions in an emergency. (Eldridge, Tr. 12729-730)

69. There is no necessary dichotomy between seeing to family safety and performing emergency duties. Most people would do both. (Mileti, Tr. 12282)

70. We cannot rule out the possibility that some plant workers would leave their posts or not report for duty in an emergency. Based on the record, however, we conclude that essential plant workers are trained as professionals and have had emergency training and that their expected behavior would, therefore, be similar to other trained professionals described by Dr. Erickson.

71. We conclude that adverse resolution of role conflict could be an action taken by individuals but not by any substantial fraction of the plant staff as a whole in an emergency. Implementation of the site emergency plan would, therefore, not be jeopardized even if one or a few individuals did fail to perform their emergency duties.

72. The Board finds that role conflict should be addressed in instructions to plant emergency workers. The potential for role conflict does not prohibit a finding of adequate Applicant compliance with this standard, however, and the Board concludes that the criteria of NUREG-0654 for implementation of Planning Standard b(2) have been met.

Planning Standard b(3); Emergency Response Support and Resources

73. Planning Standard b(3) states: Arrangements for requesting and effectively using assistance resources have been made, arrangements to accommodate State and local staff at the licensee's near site emergency operations facility have been made, and other organizations capable of augmenting the planned response have been identified.

74. This planning standard is addressed in the written testimony of Applicant Panel No. 1 Testimony ff. Tr. 11778, pp. 1-5 to 1-6 and the testimony of Mr. Sears of the NRC Staff (Sears Testimony ff. Tr. 12638, p. 12). Joint Intervenors and Governor Brown cross-examined witnesses but did not submit written testimony.

75. The Applicant has made arrangements for requesting and effectively using assistance resources. (Sears Testimony ff. Tr. 12638, pp. 3, 4, 11; Applicant Panel No. 1 Testimony ff. Tr. 11778, p. 1-6; Applicant Ex. 73, § 5)

76. The Applicant has identified organizations capable of augmenting its planned response. (Sears Testimony ff. Tr. 12638, pp. 3, 4, 9-12; Applicant Panel No. 1 Testimony ff. Tr. 11778, pp. 1-5, 1-6 and Attach. 8; Applicant Ex. 73, §§ 5, 10 and App. K)

77. The Applicant's site emergency coordinator is authorized to request Federal assistance in the event of an emergency at Diablo Canyon. Although he has this authorization the County of San Luis Obispo would normally initiate such a request through the State office of Emergency Services. (Applicant Panel No. 1 Testimony ff. Tr. 11778, p. 1-6)

78. The Federal assistance resources that have been identified would be provided by the U.S. Nuclear Regulatory Commission (NRC), the Federal Emergency Management Agency (FEMA), the U.S. Department of Energy (DOE), the U.S. Coast Guard and the Environmental Protection Agency (EPA). (Applicant Ex. 73, § 5; Applicant Panel No. 1 Testimony ff. Tr. 11778, p. 1-6) The expected times of arrival of the Federal resources are specified in Applicant Exhibit 73, Section 5. Applicant resources required to support the Federal response are identified in Applicant Exhibit 73, § 7.

79. Arrangements to accommodate the State and County emergency response organizations at the emergency response facilities, including the EOF and other accommodations for services such as communications and individual offices, have been made. (Applicant Ex. 73, §§ 5, 7; Sears Testimony ff. Tr. 12638, p. 12; Applicant Panel No. 1 Testimony ff. Tr. 11778, p. 1-6)

80. Preparations have been made by the Applicant for dispatching a representative to the offsite emergency operations center (EOC). (Sears Testimony ff. Tr. 12638, p. 11; Applicant Ex. 73, Table 5.2-1 and App. A. § 4)

81. Several offsite radiological laboratories will be available for assistance in the event of an emergency. These include the Applicant's Department of Engineering Laboratory, California Polytechnic Institute Laboratory, the Applicant's Mobile Environmental Monitoring Laboratory and laboratories at Rockwell International. Capabilities, equipment and response times for these laboratories have been identified. (Applicant Ex. 73, § 7; Applicant Panel No. 1 Testimony ff. Tr. 11778, Attach. 8; Sears Testimony ff. Tr. 12638, p. 11)

82. Organizations other than Federal, State and local which can be relied on to assist in an emergency have been identified in the Applicant's Emergency Plan. (Sears Testimony ff. Tr. 12638, p. 12; Applicant Panel No. 1 Testimony ff. Tr. 11778, pp. 1-5, 1-6) A mutual assistance arrangement among California utilities with nuclear power plants has been established to provide emergency response assistance, and other specialized nuclear technology assistance is available through letters of agreement or the response plan. (Applicant Ex. 73, §§ 5, 10 and App. K; Sears Testimony ff. Tr. 11628, p. 12; Applicant Panel No. 1 Testimony ff. Tr. 11778, pp. 1-5, 1-6)

83. State and County emergency plans contain provisions for incorporating Federal response capability into their plan. (Applicant Panel No. 1 Testimony ff. Tr. 11778, p. 1-6; Applicant Ex. 73, App. C, § IVB.2.a.7; Applicant Ex. 80, §§ 1.7.C and E)

84. Dispatch of State Radiological Health Section personnel to the EOF is described in Annex 2, Volume 1, Section III of the State plan. (Applicant Ex. 82) Sections I.7 and II.3 of the County plan describe assignment of County representatives to the EOF and the support organizations to be called upon.

85. FEMA has reviewed local emergency plans for compliance with the requirements of this standard. It has no recommendations for corrective actions. (Applicant Panel No. 1 Testimony ff. Tr. 11782, pp. 2, 3, Attach. 2; Staff Ex. 35; Eldridge Testimony ff. Tr. 12682, pp. 5-6; Eldridge, Tr. 12704-705, 12708)

86. The Board concludes that the requirements of Planning Standard b(3) and the criteria of Part C of NUREG-0654 have been met.

Planning Standard b(4): Emergency Classification System

87. Planning Standard b(4) states: A standard emergency classification and action level scheme, the bases of which include facility system and effluent parameters, is in use by the nuclear facility licensee, and State and local response plans call for reliance on information provided by facility licensees for determinations of minimum initial offsite response measures.

88. This standard was addressed at the hearing in the submitted written testimony of Applicant Panel No. 1 and of the NRC Staff. Joint Intervenors and Governor Brown submitted no direct testimony but did conduct cross-examination.

89. The purpose of the emergency classification system is to provide a means of communicating a general assessment of the severity of an accident to offsite response agencies. It also serves as a triggering mechanism for certain actions such as activating the early warning system. (Shiffer, Tr. 11805-806)

90. A standard emergency classification and action level scheme using plant specific system and effluent parameters has been established under the Applicant's emergency plan and implementing procedures. The classes of emergency which have been specified are: (1) notification of unusual event, (2) alert, (3) site area emergency

and (4) general emergency. Procedures in the plan specify observable indications and plant instrumentation readings which are the initiating conditions for declaring a particular emergency. (Applicant Ex. 73, § 4; Sears Testimony ff. Tr. 12638, p. 13)

91. The plan includes a procedure which lists each of the conditions in Appendix 1 of NUREG-0654 with corresponding indicated conditions for the Diablo Canyon plant. The procedure also lists each of the postulated accident conditions which were analyzed in the FSAR along with other conditions that may result in an emergency and assigns each to a specific classification. The NRC Staff has evaluated that list and determined that it is consistent with NUREG-0654 Appendix 1. (Sears Testimony ff. Tr. 12638, p. 13)

92. The plan identifies parameter values and equipment status for each emergency class. Each procedure describes systems and diagnostics, automatic action, immediate operator actions, subsequent operator actions and appendices that give specific instructions for classifying the event. (Sears Testimony ff. Tr. 12638, pp. 13, 14)

93. For all the emergency classification levels the Applicant will notify all of the response agencies including the County, State and NRC. (Shiffer, Tr. 11808) During the August 1981 exercise a delay in ordering sirens to be sounded occurred after the general emergency level was reached. The Board concludes that the delay was attributable

to the failure of individuals to act and not to a deficiency in the emergency classification system. (Shiffer, Kaefer, Tr. 11808-811; Sears, Tr. 12644-695)

94. Both the State and County plans have incorporated a coordinated standard emergency classification and action level scheme consistent with the Applicant's. (Applicant Ex. 80, §§ 1.6.A, 1.6.C, 1.E.4, II.1, II.3; Applicant Ex. 73, App. C, § III.B)

95. FEMA has reviewed offsite emergency preparedness relevant to this standard and has made no recommendations for correction. (Applicant Panel No. 1 Testimony ff. Tr. 11782, p. 3 and Attachs. 2 and 3; Staff Ex. 35; Eldridge Testimony ff. Tr. 12682, pp. 5-6)

96. Battelle Northwest Laboratories conducted an independent review of the Diablo Canyon Emergency Plans. Its report (Staff Ex. 34) noted a number of deficiencies in the plan in relation to planning Standard b(4). The Staff discussed the Battelle report with the Applicant, and the Applicant has changed the procedures related to this standard to agree with all the comments of the Battelle report. The Staff confirmed that the Applicant made these changes. (Sears, Tr. 12666)

97. The Board concludes that the Applicant's Standard Emergency Classification and Action Level System and Procedures conform to the criteria of Part D of NUREG-0654, and Appendix 1, and meet the requirements of Planning Standard b(4) of 10 CFR 50.47

Planning Standard b(5): Notification Methods and Procedures

98. Planning Standard b(5) states: Procedures have been established for notification by the Licensee of State and local response organizations and for notification of emergency personnel by all organizations; the content of initial and followup messages to response organizations and the public has been established; and the means to provide early notification and clear instruction to the populace within the plume exposure pathway EPZ have been established.

99. This planning standard was addressed in submitted written testimony of Applicant Panel No. 2 and testimony of Mr. Sears of the NRC. Additionally Mr. Jack Eldridge of FEMA and Mr. Tim Ness of the County Planning Office also testified. Joint Intervenors and Governor Brown submitted no written testimony; however, they cross-examined the witnesses extensively.

100. The Licensee has established procedures for notification for State and County response organizations. These procedures are described in the Diablo Canyon Emergency Plan, Sections 5 and 6 (Applicant Ex. 73) and in the Applicant's implementing procedures (Applicant Exs. 75, 75A). Notification of offsite agencies will be made by the Applicant's emergency liaison coordinator who will be appointed by the shift foreman acting as the interim site emergency

coordinator in the event of an emergency at the plant. (Sears Testimony ff. Tr. 12638, pp. 13-15; Shiffer, Tr. 11806)

101. Notification of emergency workers will be carried out by methods outlined in the Applicant's Plan Section 5, Procedures G-1 and G-3 of the County Plan and Sections I, II and III in the State Plan Section V.B. (Applicant Exs. 73, 80 and App. B of Applicant Ex. 73)

102. The emergency procedures contain provisions for initial emergency notification messages for the four different classes of emergencies. The messages will contain information about the class of emergency, recommended protective actions, and information about radiation release, if any. Provisions also exist for followup messages from the Applicant to offsite authorities. These provisions require update of the status of the plant about every 15 minutes to each organization. The Applicant will provide supporting information to authorities for messages for the public. These messages will be verified for accuracy through approval by the Applicant's Recovery Manager. (Sears Testimony ff. Tr. 12638, pp. 13-16; Applicant Exs. 73, 74)

103. Procedures for notification of the public within the plume EPZ are included in the County plan. (Applicant Standard Operating Procedures, Exs. 80, 81, 81A)

104. The early warning system (EWS) consists of 83 radio-controlled sirens which have been installed. The purpose of the siren system is to alert the public to turn on radios for emergency instructions. Emergency instructions will come from designated emergency broadcast stations. The early warning system has the capability to notify nearly 100 percent of the population within the State BEPZ within 15 minutes. (Applicant Ex. 73, § 7; Sears ff. Tr. 12638, pp. 17-19; Staff Ex. 30; Applicant Panel No. 2 Testimony ff. Tr. 12118, pp. 2-3; Skidmore, Tr. 12124)

105. The sounding of sirens is mandatory at the general emergency level and discretionary at the site area emergency level. (Ness, Tr. 12485)

106. The siren system meets the requirements of NUREG-0654 and follows guidelines of FEMA CPG 1-17 Outdoor Warning Systems Guide. (Applicant Ex. 73, § 7)

107. The siren system will be activated by radio from the San Luis Obispo County Sheriff's Office. If the activating system should fail, the siren system could be activated using three backup encoders located at County firestations. (Applicant Ex. 73, § 7)

108. County personnel will notify the emergency broadcast system and will provide instructions for the public. (Applicant Ex. 73, § 7; Sears Testimony ff. Tr. 12638, p. 18)

109. Joint Intervenors assert correctly that the siren system has not been tested at full power although it is installed. The Applicant stated that San Luis Obispo County requires that the full-scale siren test be limited to midday during August or September unless otherwise directed by Federal or State authorities. (Applicant Panel No. 2 Testimony ff. Tr. 12118, pp. 2-3) Therefore, although the system stands ready for tests, the Applicant is restrained by local authorities from testing until those times. The Board finds it reasonable to conduct the tests during August or September 1982 according to the preferences of San Luis Obispo County which has responsibility for activating the sirens. (See Finding 107)

110. Joint Intervenors challenge the County communication system to be used for warning County workers of an emergency. They believe that the cascade or sequential warning system to be used is in violation of NUREG-0654, Appendix 3, at 3.7, which states "warning points cannot be encumbered by sequential calldown processes nor can response organizations accept the time lost by such processes. (Joint Intervenors Proposed Finding 4, p. 38)

111. The provisions of NUREG-0654, Appendix 3, pages 3-7, apply to the methods by which organizations are to be notified and not to the means by which individual emergency workers are to be notified. The revised County plan (Applicant Ex. 80, p. II.2(1)) states that County departments, schools, large employers and medical and other institutions will be simultaneously notified by means of a monitor radio with tone alert. Thus principal agencies requiring notification within the County will be notified simultaneously as required by NUREG-0654.

112. NUREG-0654 does not prohibit cascade or sequential warning systems for the notification of individual emergency workers. The County emergency plan includes a cascade plan for telephone notification which will reach into every element of the response organization. The plan generally specifies that organizations upon receiving a notification will in turn notify key personnel using prioritized call lists. (Applicant Ex. 80, p. II.2(1))

113. The County plan for the emergency warning network is given in Attachment 2.2-1 of Applicant Exhibit 80. Examination of these alerting diagrams reveals that there is some sequential organization to organization notification. For example, sheet 1 of Attachment 2.2-1 indicates that the Sheriff's Office, upon receiving an emergency notice at the alert level or greater, has seven offices to notify in addition to the Sheriff himself. The attachment further shows that this

notification may take place either by telephone or by radio; however, telephone is the primary means of communication. Therefore Joint Intervenors are correct in asserting that at least some sequential notification does take place from the Sheriff's Office, which is the initial offsite warning point. The stated purpose of the NUREG requirement is to prevent loss of time that would be involved both for the reporting office and for the receiving office if sequential calling is used. The diagrams of the County plan, however, indicate that consideration has been given to restricting the number of sequences required for any one warning point. Our examination of the alerting diagrams does not reveal excessive warning responsibilities on any second level warning point listed. We do not think that it would take an excessively long time, for example, for the Sheriff's Office to notify seven other offices even if it were done sequentially.
(Applicant Ex. 80, Attach. 2.2-1)

114. The Board concludes that principal offices within the County will be notified by simultaneous notification methods, that redundant notification methods consisting of both radio and telephone exist throughout the County warning system and sequential call-down methods which are used are reasonable and not in conflict with the intent of NUREG-0654.

115. The County plan provides for notification of those in the population who may not be adequately warned by the siren system.

People in parks and on beaches will be notified by mobile public address and hand-held public address units. These notifications will be carried out by the State's Department of Parks and Recreation, the County Sheriff's office and the city police. Isolated rural population and transients outside of siren range will be notified by vehicles carrying mobile public address systems. Helicopters carrying loudspeakers will be utilized. Ships at sea will be notified by marine radio and by direct interception by the U.S. Coast Guard.

Institutions including schools, hospitals, convalescent hospitals, residential care facilities and large employers will notify their populations using their internal plan which will be activated by instructions from a tone alert radio system. Deaf persons and those homebound and living alone will be warned by phone calls, teletype service or police patrol car visits as appropriate. Need for special notification will be based on lists established at local police and fire stations. If notification is needed in the State extended EPZ it will be made by police and fire vehicles conducting a mobile public address alert. (Applicant Ex. 80, § II.5)

116. Joint Intervenors assert that the early warning system (EWS) sirens should be sounded in the event of an alert or site area emergency rather than reserving its mandatory use exclusively to a general emergency. (Joint Intervenors Proposed Findings, p. 39)

117. Governor Brown also asserts that the sirens should be sounded at lesser levels of emergency than the general emergency. He argues that with an effective public information system there would be no reason to believe that early sounding of the sirens could do anything but enhance the safety of the public in the event of an emergency. This is because the public could receive early notice of the possible later need to take protective actions. The public, with earlier warning, could make preliminary arrangements to gather their families and supplies in the event of a later evacuation. Evacuation would be aided because the public, having already received notification, would be ready to act promptly. This is important because evacuation is preferred over protective sheltering, which reduces doses to the public by only 10 percent. (Brown Proposed Findings, pp. 45, 46)

118. When the public notification system is viewed as a whole it is evident that there are a variety of primary and backup means of notifying the public. (Shiffer, Tr. 11809) At levels of emergency less than a general emergency, the public will be kept informed through normally scheduled radio and television broadcasts. (Shiffer, Tr. 11872; Skidmore, Tr. 12137; Baxter, Tr. 12138)

119. Under these circumstances the Board finds it reasonable that a particular signal, i.e., the siren, be reserved for conditions under which prompt action is needed by the public. Mandatory use of the

siren for less serious incidents would dilute the effectiveness of the signal even with an effective broadcast system since lesser emergencies could either get worse or better with the passage of time. (Ness, Tr. 12487-490)

120. We conclude that the provision for mandatory sounding of the early warning system at the general emergency level and discretionary sounding at the site area emergency stage is reasonable and that protection of the public health and safety would not be improved by mandatory sounding of the sirens at lower levels of emergency.

121. Joint Intervenors assert that reliance on the telephone as a backup notification system to the EWS sirens provides inadequate assurance of safety because the phone system is insufficiently reliable and its capability to support the number of calls reasonably anticipated during emergencies has not been studied or demonstrated. (Joint Intervenors Proposed Findings, p. 39)

122. Joint Intervenors submitted Exhibit 126, which consists of a memorandum for the record written by a Mr. Jack Eldridge of FEMA, as evidence concerning the reliability of the County phone system.

123. Having examined Joint Intervenors' Exhibit 126 the Board concludes that the evidence contained therein concerning a faulty telephone system in San Luis Obispo County is unconvincing. The

memorandum establishes only that a single person in the San Luis Obispo County Fire Department thinks the telephone system is inadequate.

124. Cross-examination by Joint Intervenors of Messrs. Eldridge and Ness established only that neither was aware of any studies done on the adequacy of the phone system during emergencies. (Eldridge, Tr. 12718, Ness, Tr. 12494)

125. The Board finds that there is no body of evidence to support the assertion that San Luis Obispo County telephone system is, as a whole, unreliable for emergency use.

126. The concern expressed about the telephone being used as a backup notification system to the early warning siren system is not supported in the record. (Joint Intervenors Proposed Finding 11, p. 39) The County has backup communication systems to be used if some persons cannot be reached by phone. (Ness, Tr. 12494) However, no reference to using telephones as a backup to the EWS is made.

127. FEMA's findings on emergency planning identified several areas of deficiency regarding this standard. Corrective actions are needed to (1) provide technical specifications for design and maintenance of the EWS, (2) establish radio and phone links among the EOC and the emergency broadcast stations and the County on giving emergency instructions to the public, (3) completion and operability

of the EWS/EBS and (4) provision of pagers to key County personnel.
(Applicant Panel No. 1 Testimony ff. Tr. 11778, Attach 2, p. 4)

128. The County and the Applicant are addressing these needed actions according to a schedule submitted by FEMA Region IX to FEMA Headquarters. Technical specifications are now developed for the EWS. Pagers are on order and will be provided. (Nevolet Tr. 12057)
Commitments to obtain agreements and communication equipment have been made. The EWS System has been installed and will be tested in the summer of 1982. Completion of these items will be assured by FEMA and NRC Staffs prior to full power operation at Diablo Canyon. (Eldridge Testimony ff. Tr. 12682, pp. 7-9)

129. The Board concludes that it has reasonable assurance that the deficiencies noted by FEMA on this planning standard are corrected or will be corrected promptly. The Staff should verify completion prior to issuing an operating license.

130. The Board concludes that the early warning siren system will together with supplementary methods of notification, provide essentially complete notification of the general public in the event of an emergency at Diablo Canyon. We therefore conclude that the offsite emergency plans and the Applicant's emergency plans meet the

requirement of 10 CFR 50.47b(5) and the criteria of Part E of
NUREG-0654.

Planning Standard b(6): Emergency Communications

131. Planning Standard b(6) states: Provisions exist for prompt communications among principal response organizations to emergency personnel and to the public.

132. Written testimony on this planning standard was submitted by Applicant Panel No. 3 Testimony ff. Tr. 12052 and by the NRC Staff. (Sears Testimony ff. Tr. 12638) Joint Intervenors and Governor Brown did not submit written testimony; however, they conducted extensive cross-examination of the Staff's and Applicant's witnesses. Additional testimony on this standard was provided by Mr. MacElvaine of the San Luis Obispo County Board of Supervisors, Mr. Eldridge of FEMA, and Mr. Ness of the San Luis Obispo County Planning staff.

133. The Applicant has submitted plans which provide for prompt communication capability between the Applicant, the County, the State and the NRC. (Applicant Ex. 73, § 7)

134. Communications capability for public notification are described in the County plan. (Applicant Ex. 80, § 3; County Standard Operating Procedures, Applicant Exs. 81 and 81A)

135. The Applicant's communication system includes both primary and backup means of communication with its emergency response

organization. Components of the Diablo Canyon communication system consist of private dial systems using two separate microwave systems; a computerized branch exchange for both internal use and access to Pacific telephone; Internal Private Automatic Branch Exchange; dedicated special purpose Pacific telephone system; dedicated circuits for the data communication system; dedicated circuits for NRC communications; a UHF radio system and VHF radio system. (Sears Testimony ff. Tr. 12638, p. 19)

136. Dedicated phone links exists between the power plant, the County Sheriff Watch Commander's Office, County EOC , State Office of Emergency Services and the NRC. (Applicant Ex. 73, § 7; Applicant Panel No. 3 Testimony ff. Tr. 12052, p. 3-2)

137. Redundant communications links exist between the power plant site and the San Luis Obispo County Sheriff's Office. These consist of UHF radio and a dedicated automatic telephone tie line. Further redundant communication links exist between the power plant and the EOC and the California Office of Emergency Services. (Applicant Panel No. 3 Testimony ff. Tr. 12052, p. 3-3)

138. An automatic telephone system is on order which will expand the dedicated system between the plant and the TSC , the California

Office of Emergency Services, the County EOC and the NRC Office at the County EOC. (Id.)

139. The Applicant can notify its response organization through a number of communication links. These include telephone beepers and radios. Key corporate personnel can also be reached through special dedicated phones installed in residences. (Applicant Ex. 73 § 7; Applicant Panel No. 3 Testimony ff. Tr. 12052, p. 3-2)

140. Principal offsite response organizations will man their communication links on a 24-hour per day basis. Communication links in the TSC and the EOF will be manned 24 hours a day when the centers are activated. (Sears Testimony ff. Tr. 12638, p. 20)

141. Radiological monitoring teams will have radio-equipped vehicles and portable radio sets for communication from the field. Fixed medical support facilities will communicate via the telephone system and mobile facilities will communicate via radio systems. (Sears Testimony ff. Tr. 12638, p. 20)

142. State and County response organizations have redundant means of communication which include telephones, radio channels and dedicated telephone lines. The plan calls for principal reliance on the telephone with radio-activated pagers for key personnel serving as backup. The telephone lines with radio-activated tone alert monitors

as backup will provide communication with County agencies, schools and other large institutions. (Applicant Ex. 81, § III.01; Skidmore, Tr. 12131; Nevolo, Tr. 12057)

143. Much of the communications equipment needed to make the communication system operable had not been installed at the time of the hearing. According to Mr. Nevolo the necessary equipment is on order and is expected to be in place by May 20, 1982. The needed equipment includes: radio equipment required to activate the EWS; radio transmitters for the EBS; additional telephone lines for the County EOC; radio transmitters for the City of Morro Bay, San Luis Obispo and Pismo Beach Fire Departments to provide backup capability for activating the siren system; portable 2-way radios to provide mobile radiation monitoring teams with direct communication with the Unified Dose Assessment Center (UDAC); and a radio repeater to be installed at Davis Peak to provide complete radio coverage. (Eldridge Testimony ff. Tr. 12688, pp. 8-13; Ness, Tr. 12556-557; Nevolo, Tr. 12061-063; Applicant Panel No. 3 Testimony ff. Tr. 12052, 3-3, 3-4 and Attach. 4)

144. Governor Brown and Joint Intervenors find the San Luis Obispo County communications network inadequate for implementation of the emergency response plan. (Governor Brown Findings, pp. 22-29; Joint Intervenors Findings, pp. 40-43) Both parties' objections are based on Governor Brown's Exhibits 9 and 10 which detail deficiencies in the County radiocommunications network. (Governor Brown Exs. 9, 10)

145. Governor Brown's Exhibit 9 is a report entitled "An Evaluation of the San Luis Obispo County Public Safety Communication System" prepared by T. R. C. Voorhees for San Luis Obispo County. This report lists communication deficiencies in San Luis Obispo County and assigns priorities to them. Priority 1 deficiencies are those recommended by FEMA for correction.

146. Priority 2 actions are recommended by Voorhees as the necessary consequence of the emergency response plan being developed. No single improvement under Priority 2 is essential, although many of the recommended improvements would enhance the performance of the County emergency organization in implementing the emergency response plan. Priority 3 and 4 items are those required for overall communications improvement but not linked directly to Diablo Canyon. (Governor Brown Ex. 9, p. 2)

147. The Board finds that significant Priority 2 recommendations have been or will be carried out. These include: (1) supplying tone alert monitor radio receivers to County agencies and institutions as an alternative to the telephone (Applicant Ex. 81, § III.01; Skidmore, Tr. 12131), (2) the addition of a repeater station on Davis Peak (Eldridge Testimony ff. Tr. 12688, p. 10) and (3) additional radio

paging capabilities for direction and control personnel and key technical staff. (Nevolo, Tr. 12057)

148. Governor Brown's Exhibit 10 is a report by the Department of Technical Services, County of San Luis Obispo, entitled "Five Year Communications Plan" dated January 1982. This report contains a description of the County communication system and tabulates a number of deficiencies which need correction over the next five years to keep the system viable. (Brown Ex. 10, General Executive Summary)

149. Neither Staff nor Applicant presented any evidence to contradict the existence of the deficiencies tabulated. The Board accepts the statement of actions needed to upgrade the County communications system as accurate. The report is critical of the Sheriff's microwave system which is used to send messages to mountain-top stations which in turn rebroadcast the messages. This is done because mountainous terrain inhibits direct radio communication. Proper functioning of the microwave system is important to communications in San Luis Obispo County. (Brown Ex. 10)

150. Disaster control activity of the County does not depend with equal criticality on all of the components of the local government communications system. One channel of the many available for communications in the County has been designated to support principal disaster control activities. This channel is termed the local government VHF (green) channel. (Brown Exs. 9, 10; Ness, Tr. 12556)

151. The local government VHF (green) channel will be used for siren system activation and for backup siren activation. It will also be used to activate the emergency pager system which will be installed in hospitals, schools and other institutions. (Brown Ex. 10, p. 22)

152. The local government VHF system (green channel) is activated by the local government radio system. It is uncertain whether this channel is dependent on the microwave system since Brown's Exhibits 9 and 10 show some conflict on this point. Problems with the Sheriff's microwave system which are identified in Brown's Exhibit 10 therefore might not apply to this channel although we cannot resolve the question from the testimony and exhibits. (Brown Exs. 9, p. 4 and 10, p. 22)

153. Although numerous deficiencies were noted elsewhere in the communications system, the technical report states that the Applicant has agreed to purchase a new system of radio transmitters to replace the older tube-type equipment which is now in place. "This new radio system will bring the local government VHF system to an excellent condition and it should be able to handle the communications needs of this channel for many years." (Brown Ex. 10, p. 22)

154. There also exists a UHF local government radio system which in its present configuration does not give adequate coverage in the northern and southern ends of the County. It is also of limited usefulness in its present configuration along the coast (Avila Beach and the South County). This channel would be used by UDAC to

communicate with health physics teams in the field. (Brown Ex. 10, p. 19; Ness, Tr. 12557)

155. Improved UHF coverage, particularly in the southeast sector of the County, could be obtained by the addition of a repeater station either at Davis Peak or Point Sal. The Applicant will install a transmitter at Davis Peak. (Eldridge Testimony ff. Tr. 12688, p. 10; Ness, Tr. 12558)

156. The UHF channel which would be used for communication by field teams is dependent upon the Sheriff's microwave system. Thus it is vulnerable to failure if the microwave system fails. (Brown Ex. 10, p. 19)

157. The County has not had a major failure of the microwave equipment since it was installed in 1974. The technical analysis concludes that the microwave equipment is now over seven years old and that eventually a major failure will occur. It appears also to suffer from design defects and maintenance problems. (Brown Ex. 10, pp. 4-7)

158. The Board concludes, after consideration of both Brown's Exhibits 9 and 10, that while the County communications system as a whole may have deficiencies requiring a systematic upgrade over a period of several years the Applicant and the County have taken steps

to ensure that the specific channel needed for an emergency at Diablo Canyon has been or will be upgraded. The equipment needed has been ordered and should be in place by May 20, 1982.

159. The Board concludes that the radio communication required in a nuclear emergency would be performed on the County (green) VHF channel or the UHF channel which, according to the technical analysis, is or will be in good condition.

160. The Board concludes that there is reasonable assurance that the critical functions of communication could be performed using the green channel and the UHF channel in an emergency at Diablo Canyon and that the County plan is in compliance with 10 CFR 50.47b(6). The Staff should assure itself of the continuing reliability of communication which is dependent on the Sheriff's microwave system, since it appears that this system could be a weak link in County emergency communication.

Planning Standard b(7): Public Education and Information

161. Planning Standard b(7) states: Information is made available to the public on a periodic basis on how they will be notified and what their initial actions should be in an emergency (e.g., listening to a local broadcast station and remaining indoors), the principal points of contact with the news media for dissemination of information during an emergency (including the physical location or locations) are established in advance, and procedures for coordinated dissemination of information are established.

162. This planning standard was addressed in the written testimony of Applicant Panel No. 2 and testimony of the Staff given by Mr. Sears. Sociological testimony was presented by Dr. Dennis Mileti for the Applicant. Joint Intervenors offered the sociological testimony of Drs. Kai T. Erickson and James H. Johnson, Jr.^{30/} Governor Brown offered no direct evidence but conducted cross-examination of witnesses.

^{30/} Dr. Mileti is Associate Professor, Department of Sociology, University of Colorado. He has written extensively on human behavior and response to disaster.

Dr. Erickson is Professor of Sociology, Yale University and Editor of the Yale Review. He has written extensively on human behavior and response to disaster.

Dr. Johnson is Assistant Professor of Geography, UCLA, who specializes in urban-social geography. He has written extensively in his field and is co-author of a sociological survey of TMI area residents.

163. The Applicant has developed a public education program. This program includes periodic dissemination of a newsletter which informs the public as to how they will be notified and what their initial actions should be in the event of a radiological emergency. The newsletters contain information about the plant, general nuclear issues, emergency planning, radiation, the EWS and a glossary of nuclear terms. The newsletters have been sent to residents in the State BEPZ. (Applicant Panel No. 2 Testimony ff. Tr. 12118, pp. 24-26 and Attachs.)

164. Emergency information has been included in the San Luis Obispo County telephone book for 1981. The page includes instructions on what to do if the emergency sirens should be sounded. It names the emergency broadcast system stations which should be listened to in event of an emergency. It advises on emergency actions and lists sources of additional information. A map of the Diablo Canyon area showing major highways is included. (Applicant Panel No. 2 Testimony ff. Tr. 12118, Attach. 12)

165. Additional plans call for the publication by the County of a booklet containing emergency instructions for distribution throughout the plume exposure pathway EPZ. The booklet is still in preparation. Plans also call for the placing of cards in motel rooms and public gathering places which will give emergency instructions. Drafts of this material have been reviewed by the NRC Staff. (Sears Testimony

ff. Tr. 12638, p. 22; Applicant Panel No. 2 Testimony ff. Tr. 12118, p. 2-6; MacElvaine, Tr. 12250-251)

166. Joint Intervenors object that the Applicant's January 1982 Diablo Canyon Newsletter erroneously suggests that the public will be notified at the alert stage, when in fact the existing classification system does not make notification through the use of sirens mandatory until the general emergency stage. (Joint Intervenors Proposed Finding 4, p. 44)

167. The Board has reviewed the January newsletter and finds its instructions on this matter are ambiguous. The text of pages 2 and 3 of the newsletter could be read as informing the public that the sirens would be sounded in the event of any emergency. The text does not make clear that the sirens would be used only in the event of a general emergency. Subsequent newsletters should make clear precisely when the sirens would be sounded. (Applicant Panel No. 2 Testimony ff. Tr. 12118, Attach. 11)

168. Two locations have been established for members of the news media in San Luis Obispo. In the first few hours of an incident at Diablo Canyon, news media facilities will be located at the San Luis Obispo County Sheriff's Office. If an incident should continue past four hours, a news media facility will be opened at the old Cuesta College Auditorium. Specific directions for reaching these centers

have been provided. (Applicant Panel No. 2 Testimony ff. Tr. 12118, Attach. 13)

169. News releases to the public will be prepared by the plant staff and approved by the public information recovery manager. He will notify the public information representative of the County emergency organization of the news release and its content and coordinate a joint briefing. (Sears Testimony ff. Tr. 12638, p. 23)

170. A rumor control center has been established by San Luis Obispo County. (Applicant Ex. 80, §§ II.6 and III.08)

171. Joint Intervenors argue that the Applicant's public education program is not in compliance with FEMA Guidance Memorandum No. 19, which they introduced into evidence as Exhibit 121. This exhibit contains draft guidance by FEMA for actions required to qualify public information and education plans against NUREG-0654. It has not been approved by FEMA Headquarters. The guidance suggests that the Applicant should conduct personal visits to the key media to conduct briefings on the emergency plan. The objective is to reach media management rather than individual reporters with these plans. The guidance suggests that FEMA and local government personnel should be participants in these briefings. (Joint Intervenors Ex. 121)

172. Mr. Baxter testified for the Applicant that although they have conducted such briefings they were not accompanied by FEMA and local government personnel. (Baxter, Tr. 12144) We are not aided by the record as to why this omission is important to the overall status of public information planning for Diablo Canyon, and we consider it insignificant.

173. Joint Intervenors assert that neither the State of California nor San Luis Obispo County has implemented a public education program, and the public understanding of essential emergency response information is virtually nonexistent. The public information booklet has not yet been published. The testimony supports a conclusion that public understanding of emergency response is low. (Ness, Tr. 12566; MacElvaine, Tr. 12249-252; Eldridge, Tr. 12718-719)

174. FEMA has found that the public information program required under this planning objective must be completed to be sure that emergency response instructions are made available to both resident and transient populations. (Applicant Panel No. 2 Testimony, Attach. 2; Applicant Panel No. 1 Testimony ff. Tr. 11782, p. 4) FEMA anticipates that this program will be completed by June 20, 1982. (Eldridge Testimony ff. Tr. 12688, p. 11; Applicant Panel No. 1 Testimony ff. Tr. 11782, Attach. 4) The County information document has been prepared in draft form but has not gone into final printing because the County

Board of Supervisors has not given its final approval to the County plan. (MacElvaine, Tr. 12251)

175. The Board concludes that the public information pamphlet being prepared by the County is important to the education of the County's citizens. This pamphlet should be available to the public well in advance of start-up of the Diablo Canyon plant because public understanding of emergency response is low. The Staff should assure itself that this document is published and disseminated promptly.

176. Joint Intervenors raised the issue of whether planners had enough information about public behavior and attitudes to design an effective emergency information and warning system. They believe that a social and psychological survey of local residents would be valuable in devising a public information program. (Joint Intervenors Proposed Findings 28-32)

177. The Applicant's witness, Dr. Mileti, stated that sufficient research has been done by behavioral and social scientists on public response to disaster to permit the design of a warning system for radiological emergencies. It is known, for example, that notification and instructions work best if they come from credible sources; if they are frequent and consistent with each other; and if they are specific about what the public should do, when to do it and precisely who should do it. Specific local information that might be obtained from a survey

of the population is not necessary to improve the plan. (Mileti Testimony ff. Tr. 12118, pp. 2-10, 11; Tr. 12161-162)

178. The County plan provides for families to evacuate as a unit. Traffic will be controlled by police and routing advice will be given; however, evacuation routes are not mandatory. Congregate care centers are provided; however, destinations are left to the choice of those evacuating. School children will be evacuated by bus. The plan does not prohibit parents from picking up children at school. However, assurance of safety of children would permit many parents to evacuate without them. (Applicant Ex. 80, p. 1.6 (13, 14); Mileti, Tr. 12267)

179. Joint Intervenors' witnesses, Drs. Erickson and Johnson, differ from Dr. Mileti on the basis of their assessment of the adequacy of the information drawn from past studies. In their view such information is not adequate to design an emergency plan and they would require that a local survey of populations be conducted to develop the specific information needed to develop a plan for a local population. (Erickson/Johnson Testimony ff. Tr. 12407)

180. In Dr. Erickson's view a radiological emergency differs from other emergencies such as floods, storms and earthquakes in that the population cannot determine when the event is over. The cause for alarm never quite disappears. People are never sure if they have been contaminated and may as a result have a deep and lasting form of

anxiety. People might evacuate before being advised to and then might move longer distances than advised. At the same time other portions of the population may underreact or become immobilized. These phenomena, in Dr. Erickson's view, become sharply defined when radiation is involved because people do not know what the dangerous substance looks like or feels like or how far it can reach into the countryside.

(Erickson Testimony ff. Tr. 12407, pp. 4, 5)

181. Dr. Erickson advocates a sociological survey on the attitudes and outlooks of the people who are expected to evacuate in the event of a crisis or who are expected to aid in the evacuation effort itself. The information gained would be used as an aid in designing public information programs. He lists a number of concerns in this regard: whether emergency workers can be counted on to report for duty; whether parents of school age children will be willing to evacuate without first hand reassurances that their offspring are being safely conveyed out of the area; whether or not the local residents are willing to believe the warnings that they receive or will follow the directives given them by local officials; and whether vehicular traffic will drain out of the danger zone in preferred evacuation directions.

(Erickson Testimony ff. Tr. 12407, pp. 9-11)

182. Dr. Johnson's research shows that at TMI the order to evacuate caused departure from a larger area than was originally intended by authorities. Evacuees fled a median distance of 85 miles

and showed directional preferences. Few people used the evacuation shelter which was provided and most stayed with friends or relatives. The significance of these factors, in Dr. Johnson's view, is that the behavior of populations during an evacuation is unpredictable.

Evacuation times which have been estimated for San Luis Obispo County might not be accurate. Dr. Johnson recommends a detailed sociological survey to reveal the attitudes of the local population regarding the kind of information which may influence evacuation decision making.

(Johnson Testimony ff. Tr. 12407, pp. 2-5)

183. Dr. Mileti did not dispute the facts stated by Intervenors' witnesses. His view was essentially that since these facts are known they can be and have been factored into the plan. There would be little additional benefit to be derived from quantification of factors which are already known to be significant. (Mileti, Tr. 12162; Tr. 12176-179)

184. Dr. Mileti agreed that underreaction of the public is possible. (Mileti, Tr. 12170) Repeated consistent warnings are an aid to preventing underreaction. (Mileti, Tr. 12179)

185. The data presented by Dr. Johnson are credible research results, and we have no trouble accepting them. We have more trouble, however, in assigning significance. The fact that populations evacuated from TMI in larger numbers than expected or went further than expected or failed to use public shelter areas has no apparent bearing

on public health and safety. We are unable to ascertain that the proposed sociological survey could be used to enhance the effectiveness of public notification or education in the Diablo Canyon area since over-response, although unnecessary, appears harmless to public health and safety and the data that would be collected in a survey would be of limited relevance to a public information program. (Johnson Testimony ff. Tr. 12407, p. 6; Tr. 12419-420)

186. We have further doubts about the accuracy of the proposed surveys. People's statements about their likely behavior under stress conditions while being interviewed under unstressed conditions appears unreliable. Dr. Mileti testified at length about the difference between people's stated response and their actual response in various situations. (Mileti, Tr. 12162-165) Dr. Erickson, when questioned on this subject, replied in essence that some information is better than none. (Erickson, Tr. 12425) We find this unconvincing. We are not faced with a situation in which we have no information.

187. We find unconvincing the proposition that radiological emergencies or disasters differ substantially from other forms of disaster for the purpose of immediate evacuation. Many of Intervenor's examples designed to establish this proposition pertain to the aftermath of disaster. (Johnson, Tr. 12411) This planning standard, however, addresses the immediate actions needed in the event of a radiological disaster. In such a disaster the public must either take shelter or evacuate. We do not see why the public's behavior during an

evacuation would be dependent on the nature of the hazard. It is more credible that a fearful public fleeing before the hazard of hurricane, chemical spill or of radiological release would behave similarly.

(Mileti, Tr. 12228-233, 12270-275) They would flee. (Johnson, Tr. 12412-413) This is precisely the action the plan prescribes.

188. Having taken the testimony of Drs. Miletti, Erickson and Johnson fully into account, the Board concludes that sociological information relevant to designing a public information system is reasonably reliable and has been taken into account in the San Luis Obispo County Emergency Plan. (Mileti, Tr. 12152-154) These factors include the general fearfulness of populations with regard to radiation, parental concerns for children (Mileti, Tr. 12267), the need for repeated warnings, the need for credible sources of information, the need for accurate information, and the need for confirmation. Quantification of public attitudes towards these factors, while interesting, would not add substantially to the effectiveness of the plan. We conclude, therefore, that the existing public information program, when implemented, will provide reasonable assurance that the public can be notified effectively in the event of a radiological accident and that no public surveys are required.

Planning Standard b(8): Emergency Facilities and Equipment

189. Planning Standard b(8) states: Adequate emergency facilities and equipment to support the emergency response are provided and maintained.

190. This planning standard is addressed in the submitted written testimony of Applicant Panel No. 5 and of NRC Staff Witness Mr. John R. Sears. (Applicant Panel No. 5 Testimony ff. Tr. 11924; Sears Testimony ff. Tr. 12638, pp. 27-29) Neither Joint Intervenors nor Governor Brown submitted written testimony on this standard. Both, however, conducted cross-examination of Applicant and Staff witnesses.

191. The Board has examined the evidence on this planning standard and finds the evidence to be as stated in the Staff's Proposed Findings of Fact which the Board adopts and reproduces below in Findings 192 through 197.

192. A TSC, OSC (onsite) and an EOF (offsite) have been established by Applicant to support an emergency response. (Sears Testimony ff. Tr. 12638, p. 24; Applicant Ex. 73, § 7; Applicant Ex. 74A; Applicant Panel No. 4 Testimony ff. Tr. 11903, pp. 4-2, 4-3)

193. Onsite monitoring systems for use in initiating emergency measures, provisions for acquiring data from offsite monitoring

analysis equipment, and offsite radiological monitoring equipment in the vicinity of the plant have been established by the Applicant. (Sears Testimony ff. Tr. 12638, pp. 24, 25; Applicant Ex. 73, § 7; Applicant Ex. 74A)

194. Provisions have been made for protective equipment communications equipment, radiological monitoring equipment and emergency supplies. (Id.; Sears Testimony ff. Tr. 12638, pp. 26, 27; Applicant Ex. 73, §§ 7, 8; Keyworth, Tr. 11911-912, 11916-917; Shiffer, Tr. 11906)

195. Meteorological instrumentation and procedures have been provided by the Applicant. (Applicant Ex. 73, § 7; Sears Testimony ff. Tr. 12638, p. 26)

196. Means for maintaining the emergency equipment have been established. (Sears Testimony ff. Tr. 12638, p. 27; Applicant Ex. 73, § 8)

197. A central location for the receipt and analysis of field monitoring data and coordination of sample media has been established by the Applicant. (Sears Testimony ff. Tr. 12638, p. 26; Applicant Panel No. 4 Testimony ff. Tr. 11903, p. 4-3; Applicant Ex. 73, § 7; Keyworth, Tr. 11911-912, Tr. 11914-915)

198. Joint Intervenors assert correctly that the interim EOF, including the UDAC, is housed in a trailer and the permanent facility is not projected for completion until 1983. Their objection to this is a general assertion that the functions of these facilities cannot be relied upon during adverse environmental conditions. The record contains no evidence as to why the interim facility is inadequate. (Joint Intervenors Proposed Findings, p. 45)

199. Joint Intervenors assert that the OSC is the largest primary assembly area for onsite personnel in the event of an emergency and that it may accommodate approximately 200 people. They object that only two emergency kits are stored in the OSC, which they say is in violation of NUREG-0654 requirements that specific equipment be stored there including respiratory equipment, protective clothing, portable lighting, monitoring equipment, cameras and communication equipment. (Joint Intervenors Proposed Findings, p. 45)

200. The OSC is located in the Security Building on site. It is to be used as a staging site for logistical support activities. It has no special provisions for minimizing radiation exposure. Personnel who assemble there would be evacuated if the security building became uninhabitable. (Applicant Ex. 73, p. 7-8)

201. Radiological emergency kits are provided at several locations on site and off site to supplement the large amount of

radiation protection equipment which is provided for routine use at the plant. Personnel engaged in recovery actions would utilize the normal plant protective equipment, since it is available in greater quantity and variety than that in the emergency kits. The plan does not anticipate that the personnel who assemble in the OSC would be outfitted with protective equipment from there. (Applicant Ex. 73, p. 7-36)

202. Evacuation kits are supplied in the OSC for the purpose of providing the equipment necessary to determine the radiation exposure received by evacuees and to survey the evacuees and their vehicles. Two such kits will be available at the OSC for use of the evacuation team. The Board concludes that this is adequate for the purpose described. (Applicant Ex. 73, p. 7-37)

203. The plant has available approximately 250 full-face masks with filters. It also has available approximately 100 MSA Model 401 self-contained breathing apparatus units. The plant has a service air system that can be used to supply breathing air. (Applicant Ex. 73, p. 7) The plant is stocked with enough protective clothing to supply approximately 350 people. (Applicant Ex. 73, p. 7-50)

204. The two radiological emergency kits stored at the OSC contain portable lighting and monitoring equipment, additional protective clothing and additional respiratory equipment. We find that

two such kits are reasonable considering the large stocks of these items available throughout the plant, which would be the primary source in the event of an emergency. The Board concludes that the OSC is adequately stocked with equipment for the purpose intended.

205. Joint Intervenors assert that neither the State nor the County has independent radiation monitors onsite. This necessitates total reliance on the Applicant to monitor and report onsite radiation releases and to provide prompt notification of an emergency at the plant. (Joint Intervenors Proposed Findings, p. 45) The Board finds the assertion to be correct but of no significance. The Applicant is responsible for radiation monitoring onsite. There are no regulatory requirements for State or County monitoring on site. (10 CFR 50.47; NUREG 0654, Part H)

206. Joint Intervenors assert that during the August 19th exercise information was not distributed promptly from the EARS system in the EOF to UDAC. (Joint Intervenors Proposed Findings, p. 47) We find that some delays did occur in transferring hard copies of information to UDAC during the exercise. However, plans call for expanding the system of terminals in UDAC which would allow them to get plant data directly and to bypass the EARS system entirely. The additional equipment is on order and was expected to have been installed by May 1, 1982. (Keyworth, Tr. 11915, 916)

207. Joint Intervenors assert that not all equipment necessary to respond to a radiological emergency is currently in place, including UDAC equipment and radio communications equipment for health department vehicles. Mr. Eldridge testified that radio equipment will be available by May 20, 1982. (Eldridge Testimony ff. Tr. 12688, p. 10)

208. Joint Intervenors assert that the EOF, TSC and OSC do not now comply with the requirements of NUREG-0696, NUREG-0654 and 10 CFR 50.47b(8). These assertions are based on the report of Battelle Pacific Northwest Laboratories on the Applicant's Emergency Plan. (Staff Ex. 34) Mr. Sears testified that the deficiencies noted by Battelle have been discussed with the Applicant and the Applicant has agreed to modify the emergency plan to take account of the comments. (Sears, Tr. 12666)

209. FEMA has reviewed this planning standard and has identified the following corrective actions as being necessary: (1) additional telephone capability for operations in the EOC should be established and lines should be installed; (2) the EOC should have a backup power source to ensure continuing operations under conditions of commercial power failure; and (3) the County should develop and install a system that will allow the cities in the plume exposure pathway zone to be kept informed of the developing situation from the EOC. (Eldridge Testimony ff. Tr. 12688, pp. 11-13)

210. FEMA has obtained satisfactory resolution of these items with the County and Applicant, and FEMA will verify that these corrective actions have been taken when they are completed. All equipment will be installed by May 20, 1982. (Eldridge Testimony ff. Tr. 12688, pp. 11-13; Applicant Panel No. 1 Testimony ff. Tr. 11778, Attach. 4)

211. The Board concludes that the issues raised by Joint Intervenors on Planning Standard b(8) have been resolved and that there exists reasonable assurance that adequate emergency facilities and equipment to support an emergency response has been or will be provided and maintained. We conclude that the Applicant and San Luis Obispo County are in compliance with the requirements of 10 CFR 50.47 b(8) and Part H of NUREG-0654.

Planning Standard b(9): Accident Assessment

212. Planning Standard b(9) states: Adequate methods, systems and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition are in use.

213. This standard is addressed in the written testimony of Applicant Panel No. 5 Testimony ff. Tr. 11924 and NRC Staff Witness Mr. John R. Sears ff. Tr. 12638, pp. 27-29. Governor Brown submitted the testimony of Messrs. Richard B. Hubbard and Gregory C. Minor which addressed certain aspects of this planning standard. (Hubbard/Minor Testimony ff. Tr. 12313)

214. Plant system and effluent parameter values, equipment status and initiating conditions for each of the four emergency action classes are identified and specified for Diablo Canyon. (Applicant Panel No. 5 Testimony ff. Tr. 11924, p. 5-2; Applicant Ex. 73, § 4)

215. The capability exists to predict core damage prior to a release in the event of a LOCA. (Applicant Ex. 73, § 6; Applicant Panel No. 5 Testimony ff. Tr. 11924, pp. 5-2, 5-3)

216. A network of radiological monitors which can be used for measuring unusual radiological releases has been established. The network involves a variety of monitors which have capabilities for a

wide range of measurement. The monitors include area monitors, process monitors, air sampler monitors and laboratory instruments. (Applicant Ex. 73, § 7)

217. Radiation effluent monitors and samplers are installed in the plant. These monitors include plant vent monitors for noble gasses, particulates and iodines, liquid effluent monitors and a steam generator blowdown tank vent monitor. (Applicant Ex. 73, § 7)

218. The Applicant has the capability for continuing radiological assessment during an accident. Assessment includes provisions for sampling of reactor coolant, containment atmosphere, plant vents, and building spaces. These measurements provide source term information which can be used to evaluate conditions, release rates, total releases and effectiveness of actions taken to terminate the accident. (Applicant Ex. 74A; Applicant Panel No. 5 Testimony ff. Tr. 11924, p. 5-10)

219. Field monitoring capabilities have been established. (Applicant Ex. 73, §§ 6, 7 and 8) San Luis Obispo County and the State of California have also made provisions to assess the consequences of radiological releases during off-normal and accident conditions. (Applicant Ex. 80, § 1.6; Applicant Ex. 82, § V.D.)

220. The Applicant has established an EARS system which is a computerized graphical display of dispersion of an effluent. The system calculates dose rates downwind from the source using data from the radiological monitors and from meteorological instrumentation. This system provides graphical displays and calculated results to the Control Room; TSC; EOF; Applicant's Corporate Center; and California Office of Emergency Services. These locations can manually activate the EARS system. (Sears Testimony ff. Tr. 12638, p. 28; Applicant Ex. 73, § 7)

221. Instructions have been established for making manual dose calculations if the EARS system is inoperable. Personnel expected to make manual dose calculations have attended a training course for that purpose. (Sears Testimony ff. Tr. 12638, p. 28) Manual dose calculations are made as a backup to the computerized dose calculations. (Skidmore, Tr. 11964; Applicant Ex. 73, App. J)

222. The Applicant has provided portable health physics equipment for both routine use and emergency purposes. Emergency kits are provided for radiological emergency monitoring onsite and offsite, evacuation, radiological injury, first aid and post-accident sampling. (Applicant Ex. 73, § 7; Applicant Panel No. 5 Testimony ff. Tr. 11924, pp. 5-7 through 5-9)

223. The Applicant has procedures for immediate radiation protection and assessment. These procedures address radiological accidents involving injury to personnel, radiological fires, inplant radiological spills and release of airborne radioactive material. (Applicant Ex. 74A; Applicant Panel No. 5 Testimony ff. Tr. 11924, p. 5-9)

224. Joint Intervenors assert that the Applicant has not quantified the error band on plant vent monitor readings which are needed for calculating radiological releases. The error associated with plant vent monitors could be in the range of 10 to 50 percent. (Shiffer/Boots, Tr. 11952-959) Joint Intervenors believe that the size of this error band precludes confidence that releases can and will be promptly and accurately assessed during an emergency at the plant. (Joint Intervenors Proposed Findings, p. 47)

225. The accuracy with which radiological releases from the plant are measured is dependent on the system being used to make the measurement. The Applicant has several different independent methods for quantifying radiological releases. The best way to quantify release is with a sample of the source and a known flow rate out. Monitoring a flow containing radioactivity as it passes by a monitor is also a suitable way of estimating releases. A less accurate way of quantifying releases is to back-calculate release rates from environmental measurements. (Shiffer, Tr. 11956)

226. Measurements of radiological dose rates in the field are accurate for assessing individual doses. The initial estimates of release from plant vents utilizing monitors are not intended as the primary means of calculating doses to the public. Field measurements will be used for that purpose. (Shiffer, Tr. 19966-967)

227. Regulatory Guide 1.97, Revision 2, specifies that the accuracy of measurements for vent monitors should be within a factor of 2. (Footnote 8, p. 1.97-18) We interpret that specification to encompass the range of accuracy specified by the Applicant's witnesses. Based on the redundant means for assessing radiological doses to the public and for assessing escape of radioactive material from the plant and the regulatory guidance on this subject, we conclude that the accuracy for instruments specified by Applicant's witnesses is sufficient for the purpose intended.

228. Joint Intervenors assert that the Applicant has not quantified the error band associated with deposition velocity of the plume, plume height, or dispersion prediction. The Applicant's witness accepted the assertion as true. (Shiffer, Tr. 11963)

229. The meteorological model used by the Applicant is constructed to calculate effluent dispersion which bounds experimental dispersion data. It is therefore conservative. (Shiffer, Tr. 11963) Field radiation measurements will be used to confirm atmospheric

dispersion calculations. If there are discrepancies between the meteorological dispersion calculation and the field monitors, reliance for dose estimates to the public would be placed on the field measurement. (Keyworth, Tr. '1960)

230. The Board concludes that the uncertainties in parameters or computed results of the meteorological model for plume dispersion are not significant for the purpose intended. Results from the meteorological model displayed through the EARS system gives a rapid initial assessment and continuing assessment of the plume direction and dispersion. However, radiation measurements will be made in the field by monitoring teams in order to assess dose to the public. The Board finds that the uncertainty inherent in the meteorological model is not significant for public health and safety in that adequate means exist for monitoring actual radiation doses to the public.

231. The Applicant was required by the Diablo Canyon Low Power Operating License to submit a proposal for compliance with Revision 2 of Regulatory Guide 1.97, pertaining to instrumentation necessary to assess plant conditions immediately following an accident. (Brown Proposed Findings, p. 20; Staff Ex. 32) The Applicant's review under this requirement showed that 21 out of 69 listed items required work to bring the Applicant's equipment into compliance with Regulatory Guide 1.97. The Applicant committed to complete the work to bring its

equipment into compliance with Regulatory Guide 1.97 prior to June 1983 as required by the Staff. (Brown Proposed Findings 5, 6, p. 21; Staff Ex. 32)

232. Governor Brown objects that this submittal is cursory and conclusory and provides no details of how the Applicant intends to comply with the regulatory guidance by June 1983 or in fact by any other date. (Brown Proposed Findings, p. 21)

233. The Board has reviewed the Applicant's document listing the equipment. (Staff Ex. 32) It lists 48 items for which no corrective action is needed. The implant monitors, which were shown as Table 1 of Applicant's Panel No. 5 Testimony, were all listed among those items needing no correction. Items on that list which have not yet been installed have been obtained and are on site. (Keyworth, Tr. 11982-984)

234. The Board concludes that the accident assessment equipment which is listed in Staff Exhibit 32 is or will be installed and that no additional corrective actions are needed to meet the requirements of this planning standard. The Applicant has submitted a written commitment to complete the remaining items (which are important but not required for this planning standard) prior to June 1, 1983 as required by Staff guidance. The Staff has adequate enforcement capabilities to see that this is done. We see no error in this procedure and accordingly we find this issue of Governor Brown's to be without merit.

235. Messrs. Richard B. Hubbard and Gregory C. Minor testified on behalf of Governor Brown that the Applicant's emergency procedures are inadequate since they do not provide an indication to the operator whether reliance is being placed on equipment that is non-safety related. (Hubbard/Minor Testimony ff. Tr. 12313, p. 16) The witnesses testified that in their view the operating procedures should contain an asterisk beside equipment that is non-safety related or, as an alternative, that all non-safety-related equipment should be qualified to safety-related status. (Hubbard, Tr. 12320-321)

236. The witnesses based their assertion on paragraph 1 of Section I of NUREG-0654. That paragraph states, "facility emergency procedures shall specify the kinds of instruments being used and their capabilities." The witnesses believe that the word "capabilities" in that criterion refers to the capability of the equipment to withstand the accident environment. (Minor, Tr. 12325)

237. Messrs. Hubbard and Minor cited in their testimony Applicant's commitment that it was in the process of insuring that its operators are aware of which instruments mentioned in its revised and expanded emergency operating procedures (other than primary instruments) may not be available due to lack of qualification. (Hubbard/Minor Testimony ff. Tr. 12313, p. 16)

238. Governor Brown's witnesses may have strained the definition of the term capabilities in this context beyond what was intended. (Tr. 12325) In the context of Criterion I.a of NUREG-0654, we do not think that the term capabilities referred to environmental qualification of equipment or to safety-related equipment. Our perusal of Table 2 of Regulatory Guide 1.97, Revision 2, suggests a simpler meaning. The instruments noted therein are accompanied by notations as to the range of measurement capabilities required for each monitoring task. In the context of a criterion requiring the identification of parameter values, we find this interpretation of capability to be more reasonable.

239. The witnesses demonstrated some confusion over the term "safety related" and "environmentally qualified." They eventually conceded that the equipment they had in mind did not meet the definition of safety-related equipment. They concluded that the equipment should at least be qualified for the environments that it must withstand. (Minor, Tr. 12332) The issue finally reduced to the assertion that in addition to operator training the witnesses would like something in the procedure to denote equipment which might not be available when called upon to perform its task. (Hubbard, Tr. 12333)

240. Governor Brown requested in his proposed findings that the Board take official notice of the Staff's SER in the TMI Restart Proceeding where the Staff supported the need to identify the

qualification status of equipment relied upon in an emergency. The Board declines to do that since the Staff has issued an SER in the Diablo Canyon proceeding covering the same subject. (NRC Staff Ex. 31)

241. Staff Exhibit 31 (p. B-10) lists four criteria for the exemption of equipment from environmental qualification:

(1) Equipment does not perform essential safety functions in the harsh environment and equipment failure in the harsh environment will not impact safety-related functions or mislead an operator (emphasis added).

(2) a. Equipment performs its functions before its exposure to the harsh environment, and the adequacy for the time margin provided is adequately justified:

b. Subsequent failure of the equipment as a result of the harsh environment does not degrade other safety functions or mislead the operator (emphasis added).

(3) The safety related function can be accomplished by some other designated equipment that has been adequately qualified and satisfies the single failure criterion.

(4) Equipment will not be subjected to a harsh environment as a result of the postulated accident.

These criteria show, among other things, that the Staff has considered the effect on the operator of malfunctioning equipment in its criteria for determining whether or not equipment should be environmentally qualified.

242. Based on the fact that the Applicant intends to train its operators on the equipment which is not environmentally qualified, and further on the fact that the criteria for environmental qualification include consideration of the impact of failure on operators, the Board concludes that this concern is adequately addressed. We see no merit in the wholesale classification of equipment as safety related. We see no harm in placing asterisks in the emergency procedures next to equipment which is not environmentally qualified as suggested by Mr. Hubbard (Tr. 12320), although there is little gain in safety for so doing. We conclude that this is an issue of minor safety significance and we therefore decline to order the Applicant to place asterisks in his operating procedures manual next to nonenvironmentally qualified equipment.

243. FEMA has found the offsite monitoring assessment capabilities under this standard to be satisfactory. (Applicant Panel No. 1 Testimony ff. Tr. 11682, p. 5, Attach. 2; Eldridge Testimony ff. Tr. 12688, pp. 5-6)

244. The Board concludes that onsite and offsite plans for accident assessment comply with the standards of NUREG-0654, Section I and of 10 CFR 50.47b(9).

Planning Standard b(10): Protective Actions

245. Planning Standard b(10) states: A range of protective actions have been developed for the plume exposure pathway EPZ for emergency workers and the public. Guidelines for the choice of protective actions during an emergency, consistent with Federal Guidance, are developed and in place and protective actions for the ingestion exposure pathway EPZ appropriate to the locale have been developed.

246. Procedures for the activation and functioning of the onsite emergency organization, including use of an emergency warning signal system, are in place. The warning system is to be used to alert onsite personnel that an emergency condition exists. The actions to be taken upon activation of distinctively different signals are to be communicated to onsite visitors and construction workers as well as to all onsite plant personnel. Offsite communication systems, including telephones and radio broadcasts, are also in place and available to warn the public (Applicant Emergency Plan, Ex. 73, §§ 6, 7; Sears Testimony ff. Tr. 12638, p. 32)

247. Methods exist to account for plant staff personnel, visitors and any construction workers who may be on site. (Sears Testimony ff. Tr. 12638, p. 33; Applicant Ex. 73, § 6.3.1.2.)

248. Evacuation of onsite non-essential personnel is planned as a protective action. (Applicant Ex. 73, § 6.3.1.3; Applicant Ex. 75, p. 6-5)

249. Sheltering is used as a protective action for non-essential personnel on site when the dose expected during evacuation is higher than that which would be received in shielded areas. (Applicant Panel No. 6 Testimony ff. Tr. 12184, p. 6-2)

250. The Applicant can evacuate onsite non-essential personnel even during heavy rains on more than one road. It can also provide evacuation by helicopters or boats. (Sears, Tr. 12649, 12667-69, 12791-792; Shiffer, Tr. 12773-776)

251. Persons remaining or arriving on site during the emergency will receive protection by using respiratory equipment as required, using protective clothing, by taking thyroid blocking pills when it is determined that their use is appropriate and by using dosimetry and contamination control. (Applicant Emergency Plan, §§ 6.3.2 and 6.3.3; Applicant Panel No. 6 Testimony, p. 6-2)

252. The evacuation time estimate made by Applicant conforms with the requirements of Appendix 4 of NUREG-0654 and is therefore accepted for the purposes of this case. (Sears Testimony ff. Tr. 12638, p. 34; "Evacuation Times Assessment Study for the Diablo Canyon Nuclear Plant,"

(Applicant E 75A)) A second estimate of evacuation time, which was done independently by the TERA Corporation, leads to similar estimates as the above report. (Applicant Ex. 84)

253. The plan includes a procedure that provides criteria for expanding the boundaries of onsite controlled areas or the setting up of new controlled areas if the need arises during an emergency to establish administrative control for radiation protection purposes. (Sears Testimony ff. Tr. 12638, p. 34; Applicant Ex. 74A)

254. The plan sets out the mechanism for recommending protective action to the appropriate State and County authorities after the occurrence of a radiological event. (Applicant's Ex. 75A, Number EP-RB-10.)

255. FEMA's evaluation of offsite preparedness found no corrective actions needed to meet this planning standard. (Applicant Panel No. 1 Testimony ff. Tr. 11782, Attach. 2; Eldridge Testimony ff. Tr. 12688, p. 5-6)

256. Ingestion pathway protective actions have been developed by the Applicant, the State and the County. Actions would be taken by the State and County to prevent or reduce the concentration of radioactivity in human food and animal feed. (Applicant Ex. 73, App. C, pp. 12, 13, 35; Applicant Ex. 80, § II.10)

257. The County plan has provisions for notifying all segments of the transient and resident population for protecting persons whose mobility is impaired due to institutional or other confinement; for use of radioprotective drugs for emergency workers and institutionalized persons; the means of relocation, including buses needed for non-car owners and school populations; and precautionary measures such as limiting hospital admissions, closing schools, parks, and beaches. (Applicant Ex. 80, §§ II.5, II.7, II.8; Applicant Ex. 81, § III.01, III.02, III.05, III.08)

258. Joint Intervenors' witnesses challenged the evacuation time estimates for several reasons: (1) Traffic will not flow at maximum capacity; (2) Police would not control traffic and traffic would stagnate; (3) evacuation times do not account for bus or ambulance trips; (4) the number of private vehicles is undercounted; and (5) shadow evacuation from outlying areas will cause traffic backup in the EPZ. (Plotkin/Pulido Testimony ff. Tr. 12580, p. 3-10; Tr. 12617-621) The witnesses consistently urged the most conservative assumptions, however, which the Board concludes are not credible. (Plotkin, Tr. 12599-600, 12604)

259. The purposes for evacuation time estimates are to identify transportation routes for which traffic control planning is needed and to provide time estimates which enable decision makers to choose between sheltering and evacuation as protective actions. (Sears

Testimony ff. Tr. 12638, p. 29-30) Extremely conservative assumptions do not serve these purposes. (Urbanik, Tr. 12389-400) The time estimates by T. R. C. Voorhees were realistically made over a range of normal and adverse conditions. These provide a range of estimates of evacuation times to decision makers. (Winslow, Tr. 12193-207; Urbanik, Tr. 12380) Applicant's and Staff's witnesses both conclude that police can control traffic. (Winslow, Tr. 12222; Urbanik, Tr. 12394) Accidents are considered in traffic flow estimates and they do not affect overall time estimates significantly. (Urbanik, Tr. 12381) The number of ambulance and bus trips required would be too small to impact overall evacuation times. (Urbanik, Tr. 12391-392) The number of vehicles involved in an evacuation is not undercounted since the estimate of 1.3 vehicles per household is consistent with recent studies. (Urbanik, Tr. 12383) Voluntary evacuation from outside the BEPZ will not cause traffic backups within the EPZ. (Winslow, Tr. 12779-80)

260. The Board has considered Joint Intervenors' assertions on public and emergency worker behavior in its analysis of Planning Standard b(1), b(2) and b(7) where we conclude that their proposed actions are not warranted. We conclude that time estimates for emergency evacuation of the public within the plume exposure EPZ are valid and in conformance with Appendix 4 of NUREG-0654. The Applicant has conformed to the onsite criteria of NUREG-0654 for protective actions. The Board therefore finds that adequate protective actions can be taken both on site and off site in the event of an emergency and

the requirements of 10 CFR 50.47 and criteria of Part J of NUREG-0654
have been met.

Planning Standard b(11): Radiological Exposure Control

261. Planning Standard b(11) states: Means for controlling radiological exposures, in an emergency, are established for emergency workers. The means for controlling radiological exposures shall include exposure guidelines consistent with EPA Emergency Worker and Lifesaving Activity Protective Action Guides.

262. Programs to control radiological exposures of emergency workers have been established by Applicant's site emergency plan (Applicant Ex. 73, §§ 6.3, 7.4); by Applicant's Implementing Emergency Procedures (Applicant Exs. 74, 74A; Applicant Ex. 75A, RB 4-6); by the San Luis Obispo County Plan and procedures (Applicant Exs. 80, 81, 81A) and by the State of California Plan (App. B of Applicant Ex. 73). (Cf. written testimony of Applicant Panel No. 5 ff. Tr. 11924, pp. 5-14 to 5-17; Sears Testimony ff. 12638, pp. 34-35; Applicant Ex. 73, § 6; Sears Testimony ff. Tr. 12638, p. 35; Applicant Panel No. 10 Testimony ff. Tr. 12022, p. 10-3) Joint Intervenors and Governor Brown submitted no evidence on this standard.

263. Applicant's program for controlling radiological exposure of emergency personnel during an emergency is consistent with EPA Emergency Worker and Lifesaving Activity Protective Action Guides. (Sears Testimony ff. Tr. 12638, p. 35; Applicant Panel No. 10 Testimony ff. Tr. 12022, p. 10-3)

264. Applicant's means for controlling radiological exposures to emergency personnel during an emergency adhere to criteria of NUREG-0654, Part K and satisfy the requirements of 10 CFR § 50.47 b(11) and Appendix E.IV.E of 10 CFR Part 50. (Sears Testimony ff. Tr. 12638, p. 36)

265. FEMA's evaluation of site preparedness to control radiological exposures of emergency workers set out a single corrective action, i.e.: "Provisions must be made for the distribution of dosimeters, both self reading and permanent record devices, to emergency workers. This equipment should be permanently located in the county." (Attach. 2 to Applicant Panel No. 1 Testimony ff. Tr. 11782, p. 5) FEMA will verify the corrective action when such action is taken. (Eldridge Testimony ff. Tr. 12682, p. 13)

266. The Board concludes that the corrective action recommended by FEMA must be completed prior to operation at full power. In all other respects the Board finds tht onsite and offsite planning meets the requirements of 10 CFR 50.47 and the criteria of Part K of NUREG-0654.

Planning Standard b(12): Medical and Public Health Support

267. Planning Standard b(12) states: Arrangements are made for medical services for contaminated injured individuals.

268. Applicant has arranged for a local and backup hospital to provide medical services for contaminated injured individuals. These hospitals are French Hospital in San Luis Obispo and Saint Francis Memorial Hospital in San Francisco. Both have the capability for evaluating radiation exposure and uptake and the capability to handle contaminated individuals. (Applicant Ex. 73, §§ 5.3.3.2, 6.3.9, App. H. See also Applicant Panel No. 7 Testimony ff. Tr. 12065, Attach. 16, App. E, Part C and App. L, St. Francis Memorial Manual on admission and management of radiation casualties.)

269. The Applicant has provided for onsite first-aid capability to handle medical emergencies including those involving radiological contamination. (Applicant Ex. 73, §§ 7.5.2, 8.1.16) The first-aid room is located in the access control area. It is equipped with standard first-aid supplies and decontamination equipment. (Sears Testimony ff. Tr. 12638, p. 37)

270. The Applicant has provided for transport of victims of radiological accidents to hospitals. These transport services would be provided by San Luis Ambulance Company, San Luis Obispo; Air Ambulance,

San Carlos; and San Francisco Ambulance Company, San Francisco.
(Applicant Ex. 73, § 5.3.3 and App. E)

271. Training has been provided to medical support personnel who would treat an injury which might involve radioactive contamination. Nine physicians and 13 nurses from French Hospital and St. Francis Memorial Hospital have attended radiological courses offered by Oak Ridge Associated University, Oak Ridge, Tennessee. (Applicant Panel No. 7 Testimony, p. 7-2)

272. Drills involving the transport and treatment of simulated contaminated individuals from the plant have been conducted with the two hospitals supporting Diablo Canyon. Drills at French Hospital were conducted August 1977, May 1979, August 1980, June 1981 and August 1981. Drills at St. Francis Memorial Hospital were conducted July 1981 and November 1981. (Applicant Panel No. 7 Testimony, p. 7-3)

273. San Luis Obispo County has approximately 10 to 12 ambulances available. There are 275 physicians in the County of which approximately 90 have attended a seminar entitled "Medical Management of Radiation Accidents." (Skidmore/Shiffer Testimony ff. Tr. 12066-067; Applicant Panel No. 7 Testimony ff. Tr. 12065, Attachs. 11, 18, 19)

274. Joint Intervenors assert in their proposed findings (page 56) and attempted to elicit on cross-examination that the number

of ambulances and trained medical personnel of San Luis Obispo County were inadequate to cope with a major radiological emergency at Diablo Canyon. Joint Intervenors appear to be reasoning from the premise that large numbers of contaminated individuals would have to be transported by ambulance to hospitals to receive emergency medical treatment in a radiological emergency.

275. Emergency medical services are needed for persons having traumatic injury, not for treatment of contaminated individuals. Persons who are contaminated (but not physically injured) can be decontaminated by someone other than a physician. Contaminated uninjured persons do not require an ambulance for emergency transportation to a health care facility. (Shiffer, Tr. 12071-072, 12074-075)

276. The number of physicians required to cope with contaminated injured persons on site could not be estimated by the Applicant's witness. These numbers depend on the possible number of physical casualties that might occur during an emergency. The witness felt subjectively that the number of physicians available was adequate. (Shiffer, Tr. 12071)

277. Considering the number of physicians in the County, the number who have received varying amounts of training on radiological matters and the fact that the principal emergency requirement is to

treat physical injury, the Board concludes that treatment capability exists to handle a substantial number of injured contaminated persons in an emergency.

278. We have no evidence before us nor do we see any reason for believing that the number of physical injuries among the general public would increase substantially during a radiological emergency. Thus we conclude that the number of ambulances and physicians that normally serve the County could reasonably be expected to serve the general population during a radiological emergency.

279. San Luis Obispo County plans for medical emergencies are given in Section II.9 of the County plan. (Applicant Ex. 80) The County plan provides for screening of individuals for radiological monitoring and decontamination and emergency treatment of injured individuals who are also contaminated. It also provides that if County medical resources become exhausted the County Health Officer may request the State Department of Health Services Disaster Medical Services to declare a Level 2 medical emergency and to provide State level assistance. (County Plan II.9, pp. 1-3)

280. FEMA has evaluated the status of offsite preparedness on the part of the County relating to this planning standard and found it to be satisfactory. (Applicant Panel No. 1 Testimony ff. Tr. 11782, p. 5 and Attachs. 2, 3; Eldridge Testimony ff. Tr. 12682, pp. 5-6)

281. Planning Standard L(3) of NUREG-0654 assigns to the State the responsibility to develop lists indicating the location of public, private and military hospitals and other emergency medical services facilities within the State or contiguous States considered capable of providing medical support for any contaminated injured individual. A list of hospitals in addition to those already named has been provided in the State plan. (Applicant Ex. 82A, §§ V 15, 16) The capabilities of these hospitals for dealing with contaminated injured individuals is not specified. The Staff should assure itself through consultation with FEMA that this criterion is met.

282. The State plan for handling contaminated injured persons is contained in Procedure E-11, Volume 2, Annex 2 of Applicant's Exhibit 82A.

283. The record is incomplete regarding the requirements stated in Footnote 1 of Part L of NUREG-0654. The footnote states that an integrated emergency medical services system and a public health emergency plan meeting certain standards and provisions of law should be a part of and consistent with overall State and local disaster control plans and should be compatible with the overall emergency response plan for the facility. We have no testimony on this matter and are therefore unable to assess its significance or the degree of compliance by any of the emergency response organizations. The Staff should investigate this matter, assessing carefully its significance

and the degree of compliance on the part of appropriate response organizations and should achieve a satisfactory resolution prior to plant operations.

284. On the basis of the record before us the Board concludes that adequate transportation and treatment facilities exists for the treatment of contaminated injured individuals in a radiological emergency. There is reasonable assurance that medical personnel providing these services are adequately prepared to treat contaminated injured individuals. We therefore find, with the exceptions noted in Findings 281 and 283, that the criteria of Planning Standard b(12) have been met by the Applicant and offsite organizations. The Staff should assess the matters noted in our exceptions and achieve a satisfactory resolution prior to operation of the plant.

Planning Standard b(13): Recovery and Reentry Planning and
Postaccident Operations

285. Planning Standard b(13) states: General Plans for recovery and reentry are developed.

286. The Applicant and the NRC Staff both presented written testimony on this standard. (Applicant Panel No. 8 Testimony ff. Tr. 11989; Sears Testimony ff. Tr. 12638, p. 38) Joint Intervenors and Governor Brown conducted cross-examination but submitted no written testimony.

287. General provisions for recovery and reentry through the post-emergency recovery organization have been established by the Applicant. (Applicant Ex. 73, § 9, and App. A, § 10)

288. An emergency recovery organization has been established with the position, title, authority and responsibilities of individuals who will fill key positions in this organization. (Applicant Ex. 73, § 9)

289. A method for periodically estimating total population exposure has been established. (Applicant Panel No. 8 Testimony ff. Tr. 11989, p. 8-3)

290. Means have been established for informing response organizations that a recovery operation is to be initiated. (Applicant Ex. 73, § 9)

291. Under the County Plan the Direction and Control Group has responsibility for implementing recovery and reentry. The Unified Dose Assessment Center (UDAC) will continue to provide data for a periodic estimation of the total population exposure to the Direction and Control Group. (Applicant Exs. 80, 81, §§ II.11, III.01, III.02)

292. General provisions for recovery and reentry have been included in the State plan. These provisions assign general functional responsibilities to State offices and provide for general radiological guidance and criteria for reentry of an area after an accident. The State Office of Emergency Services will provide support to the County reentry and recovery effort. The Department of Health Services, Radiologic Health Section will establish criteria for reentry and recovery and will monitor that effort. The Department of Health Services, Disaster Medical Services Section will assist County efforts to provide medical follow-up of exposed individuals. (Applicant Panel No. 8 Testimony ff. Tr. 11988, p. 8-3; Applicant Ex. 73, App. C; Applicant Ex. 82A, Procedure E-15)

293. The FEMA representative, Mr. Eldridge, maintains an awareness of development of the State plan although FEMA has not yet conducted its formal review. The State has primary as opposed to backup responsibility for recovery and reentry. Mr. Eldridge concluded that recovery and reentry does not require an immediate response and does not deal with matters of an immediate life-threatening nature. FEMA concluded that the State could respond in the area of recovery and reentry if needed. There are current existing arrangements with the Department of Energy and the Environmental Protection Agency to fill in for the State in any areas where it could not respond. (Eldridge, Tr. 12708-710)

294. Joint Intervenors elicited on cross-examination that the State Office of Emergency Services Deputy Director had testified in his deposition that State plans for recovery and reentry were not adequate. The Director, however, did not testify in this proceeding and we are unable to rely on the deposition statement without more detailed reasoning. (Skidmore, Tr. 12005)

295. Our own perusal of the State Plan, in the area of recovery and reentry, discloses that it contains a bare minimum of technical (as opposed to administrative) planning for recovery and reentry. It describes general plans and procedures for reentry and recovery and it describes in general the means by which decisions to relax protective measures are reached. (Procedure E 15, Applicant Ex. 82A) In view of the guidance for this standard, which prescribes the preparation of

general plans, the lack of life-threatening urgency for recovery and reentry operations, and the availability of other Federal agencies to provide assistance, we conclude that the State with the help of others could conduct a recovery and reentry operation if needed.

296. Nevertheless, we are not impressed with the State planning for this standard. We were told throughout the hearing that this is one of the few areas of principal emergency responsibility of the State. When we review the plans under this responsibility we find them cursory in their technical content. (Ex. 1, Procedure E-15, Applicant Ex. 82A) We are not sure how simple a matter recovery and reentry might be even though we accept that it does not deal with questions of immediate life-threatening importance. The State plan although marginally adequate, could be enhanced considerably by more thoughtful consideration of the radiological criteria to be applied to permit reentry of contaminated area.

297. Joint Intervenors assert that neither the Applicant nor San Luis Obispo County has estimated or provided for the cost of recovery and reentry after a major accident. (Joint Intervenors Findings 2 and 4, pp. 57-58) Neither regulation or guidance, however, require that such costs be estimated or provided for under this planning standard. (Shiffer, Tr. 11995-997) The Board concludes that there is no need for estimating such costs because the estimates would be speculative and would not contribute to the protection of public health and safety.

298. The Board finds, based on the record as a whole, that the Applicant, the County and the State have established general plans and criteria for conducting a reentry and recovery operation in the event of a radiological emergency at Diablo Canyon. We have reasonable assurance that a recovery and reentry could and would be undertaken in the vicinity of Diablo Canyon both on site and off site in the event of a radiological emergency. The Staff should assure itself, based on the forthcoming FEMA review, that adequate radiological criteria for public reentry of contaminated areas are specified by the State in its plans.

Planning Standard b(14): Exercises and Drills

299. Planning Standard b(14) states: Periodic exercises are (will be) conducted to evaluate major portions of emergency response capabilities, periodic drills are (will be) conducted to develop and maintain key skills and deficiencies identified as a result of exercises or drills are (will be) corrected.

300. This planning standard was addressed in the submitted written testimony of Applicant Panel No. 9, the testimony of Mr. Sears of the NRC Staff and Mr. Eldridge of FEMA. Joint Intervenors and Governor Brown conducted cross-examination of witnesses but did not submit written testimony on this standard.

301. An emergency exercise was conducted at Diablo Canyon on August 19, 1981. The exercise simulated an accident sequence which began with an unusual event and progressed through more serious classes to a general emergency that simulated offsite radiation releases. The emergency exercise tested several areas of the Applicant's emergency response organization. These included such functional areas as emergency organization and control, accident classification, dose assessment, notification of offsite authorities, augmentation of onsite organizations, first aid, transportation of a contaminated injured individual, onsite and offsite monitoring, response of a fire brigade

and onsite evacuation and reactor plant control. (Applicant's Panel No. 1 Testimony, Attach. 1; Sears Testimony ff. Tr. 12638, p. 39)

302. The exercise included mobilization of State and local emergency response personnel and resources. State and County personnel participated in the exercise at the San Luis Obispo County EOC. Personnel responded in a timely manner. The County demonstrated a good capability to alert, notify and mobilize emergency personnel. Personnel from the Sheriff's Office, California Highway Patrol, CALTRANS, and State parks and beaches participated and followed their emergency plan. Closure of two State parks was achieved during the exercise. (Applicant Panel No. 1 Testimony, Attach. 1, p. II-2-6)

303. Preliminary findings by FEMA were issued to exercise participants in an informal debriefing two days after the exercise. FEMA findings and recommendations for corrective actions were issued within 14 days of the exercise. (Applicant Panel No. 1 Testimony, Attach. 1, p. I-2) The NRC Office of Inspection and Enforcement, Region V issued a critique of the onsite aspects of the exercise. (Applicant Panel No. 1 Testimony, Attach. 5)

304. Official observers from Federal, State and local governments were present at the exercise. They observed the exercise from a variety of viewpoints and submitted an evaluation and critique when the

exercise was completed. (Applicant Panel No. 1 Testimony, Attach. 1, p. 1-3; see also Part 2, Exercise Evaluation Findings and Recommendations)

305. A description of exercise development and operation was provided by FEMA. The description states the basic objectives of the exercise, a description of the dates, times and places for the exercise. It also includes a schedule of simulated events and a description of these events, a narrative summary describing the conduct of the exercises and a description of the arrangements for the advance material to be provided to official observers. (Applicant Panel No. 1 Testimony, Attach. 1, pp. 1-1 through 1-8)

306. The exercise scenario was developed by the Applicant in coordination with FEMA Region 9. Local jurisdictions and the utility determined the depth of participation or level of exercise play each would use based on general guidance of the FEMA regional office. The FEMA regional staff concurred in the scenario and its objectives and guidelines. (Applicant Panel No. 1 Testimony, Attach. 1, p. 1-1)

307. FEMA's evaluation of the August 19 exercise listed four items which were not observed because equipment installation was not complete at that time. The items were: the siren system was not tested because it was not finished; monitoring receivers for special facilities such as hospitals and schools had not been installed; the

emergency broadcast system communication link was not complete and the set up of the Unified Dose Assessment Center was not fully tested. As these items are completed they will be tested and observed. (Applicant Panel No. 1 Testimony, Attach. 1, p. II-35)

308. Arrangements for scheduling drills are discussed in the Applicant plan (Applicant Ex. 73, § 8) and in the County plan (Applicant Ex. 80, § V.2). The prescribed drills include communication drills, fire drills, medical emergency drills, radiological monitoring drills, and health physics drills as required by Part N.2 of NUREG-0654. (Sears Testimony ff. Tr. 12638, pp. 40-41) San Luis Obispo County has completed an initial cycle of drills and training. (Eldridge Testimony ff. Tr. 12682, p. 14 and attached schedule)

309. The Applicant disclosed in its response to interrogatories (Joint Intervenor Ex. 120) that basic drill objectives and evaluation criteria should be included in an Appendix to Procedure 2.1 of the Corporate Emergency Response Plan. Subsequent to the preparation of those responses the Applicant added the required information to the Corporate Emergency Response Plan Implementing Procedures. (Applicant Ex. 85, p. 18; Skidmore Tr. 1257-758) The revision has been reviewed by the NRC Staff which determined that it conforms to NUREG-0654 Criterion II.N.3B. (Sears, Tr. 12639-40) The Board finds this to be an adequate resolution of this issue.

310. Mr. Sears stated on cross-examination that in his view the most serious deficiency found during the exercise was that an operator

sent to close a particular valve had trouble finding it. The NRC report on the matter pointed out the deficiency and recommended corrective actions that should be taken. These actions included supplying workers with better engineering diagrams and a more thorough description of equipment. (Sears, Tr. 12643; Applicant Panel No. 1 Testimony, Attach. A, p. 3) The Board finds this a reasonable resolution of the matter.

311. Part 50, Appendix E, Section F.1 specifies that exercises shall be conducted without mandatory public participation. Joint Intervenors Proposed Findings pp. 58, 59: (a), relating to upper echelon personnel; (e), referring to California Men's Colony and Cal Poly of San Luis Obispo; (f), referring to the evacuation of 45 persons; and (g), referring to the number of vehicles using Highway 101 as an evacuation route are all subject to the provision that an exercise not include mandatory public evacuation. Joint Intervenors' assertions on these items therefore do not identify defects in the exercise as it was performed.

312. Joint Intervenors assert in their Proposed Finding (b) that no city but Morro Bay participated in the exercise. We understand they believe that there should have been broader participation of cities within San Luis Obispo County. Paragraph N.1.B of NUREG-0654 specifies that the exercise scenario should be varied from year to year such that

all major elements of the plans and preparedness organizations are tested within a five-year period. The Board concludes that all cities within San Luis Obispo County having emergency responsibilities should participate under their SOP's in future exercises under that criterion.

313. Joint Intervenors made a number of assertions which appear to constitute a difference of opinion with those who planned the August 19th scenario as to whether certain items or assumptions should have been included in the exercise. These items include: Item h, concerning the assumed failure of critical equipment; j, the use of the northern evacuation route; k, assumed shortage of emergency workers; and l, simulation of only one minor medical complication. It is not self evident that different assumptions or actions on these matters would improve the plan or state of preparedness of the Applicant or San Luis Obispo County and our record does not give us any reasons for thinking so.

314. Joint Intervenors also felt the exercise was defective because adverse weather was not assumed. We have no evidence that assumptions about adverse weather conditions would assist in testing the plan. Section N.1.B of NUREG-0654, however, states that exercises should be conducted under various weather conditions and that some exercises should be unannounced. The Board concludes that it would be

reasonable to conduct a future exercise during adverse weather as prescribed in that paragraph.

315. Joint Intervenors assert that the current draft of the San Luis Obispo County Plan was not available during the exercise. The current draft is a revision which was issued in October 1981 while the exercise was conducted in August 1981. The exercise was used as a device for making subsequent revisions in the plan. (Eldridge Testimony ff. Tr. 12682, p. 23) This assertion of Joint Intervenors is lacking in logic and without merit.

316. Joint Intervenors cite as a deficiency that numerous problems requiring corrective actions were found by FEMA and the State Office of Emergency Services. (Joint Intervenors Ex. 124) One of the stated goals of the exercise was to uncover deficiencies needing corrective action. The deficiencies cited by FEMA are therefore evidence that that goal was achieved. It appears to the Board that the uncovering of deficiencies constitutes a successful aspect of the exercise.

317. The FEMA evaluation of the August 19 field exercise concluded that it tested the integrated capability of a major portion of the elements of the emergency plans and organizations and that the participants demonstrated a good capability to handle the exercise's events and challenges. (Eldridge Testimony ff. Tr. 12682 at 22;

Applicant's Panel No. 1 Testimony ff. Tr. 11782 , p. 2, Attach. 1) The concerns identified were considered correctable through training, drills, plan revisions or purchase of equipment. A schedule has been developed specifying how and when each concern is to be corrected. (Applicant Panel No. 1 Testimony ff. Tr. 11782, p. 2, Attach. 2, 4)

318. The Board finds that the Applicant's and County's emergency plans were adequately tested in the August 19 exercise. More drills and another exercise are scheduled for 1982. (Eldridge Testimony ff. Tr. 12688, pp. 14-15) The variations in exercise scenarios prescribed in Part N of NUREG-0654 will permit additional testing of capabilities in future years. The 1981 exercise was adequately critiqued and evaluated and deficiencies were scheduled for correction. The Board therefore concludes that the Applicant's and County's emergency response plans conform to the guidance given in Part N of NUREG-0654 and are in compliance with Planning Standard b(14).

Planning Standard b(15): Radiological Emergency Response Training

319. Planning Standard b(15) states: Radiological emergency response training is provided to those who may be called on to assist in an emergency.

320. This standard was addressed in the written testimony of Applicant Panel No. 10, Mr. John W. Eldridge of FEMA and Mr. John R. Sears of the NRC. Joint Intervenors and Governor Brown submitted no testimony, however, they cross-examined witnesses.

321. The Applicant has a radiological training program for both onsite and offsite emergency personnel. (Applicant Ex. 73, § 8)

322. The State of California and the County of San Luis Obispo have radiological training programs. (Applicant Ex. 73, App. C (State plan), § V Part J; Applicant Ex. 80, § V.1 (County plan))

323. Site-specific emergency response training for offsite emergency organizations who may be called upon to provide assistance in the event of an emergency is provided. (Skidmore, Tr. 12047-048)

324. The Applicant has provided training to medical, law enforcement, fire and other personnel having offsite responsibilities. Training has also been provided for offsite personnel responsible for

radiological assessment and field monitoring. (Applicant Ex. 73, § 8; Applicant Panel No. 10 Testimony ff. Tr. 12022, pp. 10-2, 10-3 and Attach. 17)

325. The training program for onsite emergency personnel includes routine drills that involve correction of incorrect performance and demonstration of correct performance by an instructor. The drills cover communication drills, fire drills, medical emergency, radiological monitoring and health physics. (Applicant Ex. 73, § 8)

326. Paragraph 3 of Section 0 of NUREG-0654 specifies that first-aid training should include courses equivalent to Red Cross Multimedia. The record does not disclose whether this requirement is met. The Applicant should specify and the Staff should verify the quality of the first-aid training provided to Applicant's employees.

327. The Applicant's training program includes the specialized training and periodic retraining in the categories identified in Part 0.4 of NUREG-0654. This training was verified during an NRC emergency preparedness appraisal team visit to the Diablo Canyon site and Corporate Headquarters during December 1981. (Sears Testimony ff. Tr. 12638, p. 42)

328. The Applicant makes available the specialized training specified in the ten categories in Part 0.4 of NUREG-0654 to State and local personnel or organizations on request. Such training has been

requested by the California Department of Forestry, San Luis Obispo County Department of Health and San Francisco Ambulance Service.

(Skidmore, Tr. 12049)

329. Joint Intervenors, relying on Joint Intervenors' Exhibit 120, urge that the Corporate Emergency Response Plan should contain specific information on training programs involving corporate emergency response personnel. The Applicant has revised Procedure 2.1 of the Corporate Emergency Response Plan to provide more specific information on training concerning corporate emergency response personnel. (Applicant Ex. 85; Skidmore, Tr. 12757-758) The NRC Staff has reviewed the revision and has found that it conforms to NUREG-0654 Part 0.4. (Sears, Tr. 12639-640) The Board finds that this issue is adequately resolved.

330. Joint Intervenors argue that no radiological emergency response training is planned for general personnel who might have a role in emergency response such as auto repair, phone assistance, EBS personnel and other workers other than monitoring personnel. (Joint Intervenors Proposed Findings, p. 60) In Joint Intervenors view these persons might need personal protection training if they are requested to remain behind to perform their normal duties during the course of an ordered evacuation.

331. Persons having general work functions such as those described in the previous finding will not receive specialized radiological training under existing emergency plans. No criterion of the NRC or regulation requires such training. General workers will be treated in the emergency response as members of the general public. As such, they have general information on radiological matters available to them through the normal public information and education media which have been established (or will be) by the Applicant and the County. General workers who remain behind in a radiological emergency would be advised of radiological hazards by specialists conducting environmental radiation measurements in the County. (Skidmore, Shiffer, Kaefer, Tr. 12031-036; Ness, Tr. 12473-474)

332. The Board finds no evidence that general workers who might have some role in supporting emergency response, such as gas station or auto repair workers or bank workers, would be exposed to a hazardous environment even if they did remain behind during an evacuation. There is no evidence that they would or could be compelled to work in a hazardous environment. There is no evidence that the planned radiation monitoring would fail to protect general workers. Joint Intervenors' assertion that these workers should have radiological emergency training is without support in the record.

333. The establishment of annual drill and training schedules for the State, County and Applicant and the commencement of activities

thereunder is necessary under this planning standard. This requirement was found to be in need of corrective action in the FEMA review. The second annual cycle is under development by the County, the State and the Applicant. This development was scheduled to be completed by March 15, 1982. FEMA will verify when this corrective action is completed. (Eldridge Testimony ff. Tr. 12688, pp. 15-16)

334. The Board concludes that there is reasonable assurance that radiological emergency response training is being provided by the Applicant, the State and the County to those personnel who may be called on to assist in an emergency and that the training requirements under Planning Standard b(15) have been met.

Planning Standard b(16): Responsibility for the Planning Effort:
Development, Periodic Review and
Distribution of Emergency Plans

335. Planning Standard b(16) states: Responsibilities for plan development and review and for distribution of emergency plans are established and planners are properly trained.

336. This standard was addressed in the written testimony of Applicant Panel No. 1 and the written testimony of Mr. Sears of the NRC. Joint Intervenors and Governor Brown submitted no written testimony but conducted cross-examination of witnesses.

337. Responsibility for emergency plan development has been established by the Applicant, by the County and by the State. (Applicant Ex. 73, § 8 and App. C, § V, p. 58 (State plan); Applicant Ex. 80, § V (County plan))

338. Emergency response planner training is being provided to Applicant and County staff through industry- and government-sponsored programs and other courses. (Applicant Panel No. 1 Testimony ff. Tr. 11778, pp. 1-9, 1-10; Sears Testimony ff. Tr. 12638, p. 44 and Tr. 12639-640; Applicant Ex. 73, § 8; Skidmore, Tr. 12757-758)

339. An annual independent audit of the Applicant's emergency plan is provided for. The audit will cover implementing procedures, training, readiness testing, equipment, and interfacing with State and local organizations. (Sears Testimony ff. Tr. 12638, p. 44, Tr. 12639-40; Applicant Ex. 73, § 8; Applicant Ex. 85; Skidmore, Tr. 12757-758)

340. Procedures exist for updating of the County plan. Procedures and responsibilities for making revisions and updates to the Diablo Canyon Emergency Plan Procedures include provisions for document control and distribution. (Sears Testimony ff. Tr. 12638, pp. 43-44; Applicant Panel No. 1 Testimony ff. Tr. 11778, p. 1-9; Applicant Ex. 73, § 8)

341. The County Administrator has administrative responsibility for review and update of the County Plans and Procedures and distribution of revised documents. (Applicant Ex. 80, § V.4)

342. Joint Intervenors and Governor Brown raised the question whether the Applicant's Emergency Plan included designation of an overall emergency planning coordinator. (Joint Intervenors Ex. 120, pp. 13, 14; Hubbard/Minor Testimony ff. Tr. 12313, p. 9) At the time the Joint Intervenors' Exhibit 120 was prepared by the Applicant (September 2, 1981) such a person had not been designated. The Applicant, however, revised Procedure 2.1 of its Corporate Emergency Response Plan Implementing Procedures to designate an emergency

planning coordinator. This individual has the responsibility for developing and updating of emergency plans and coordination of these plans with other organizations. (Skidmore, Tr. 12757-758; Applicant Ex. 85, pp. 4-7, 4-8) The NRC staff has reviewed these revisions and found that they comply with the requirements of NUREG-0654. (Sears, Tr. 12639-640) The Board concludes that this issue is adequately resolved.

343. Joint Intervenors, again relying on their Exhibit 120, asserted that the emergency plan did not specifically define the training requirements for the emergency planner. At the time Exhibit 120 was prepared, such requirements had not been defined. The Applicant subsequently revised Procedures 2.1 of its Corporate Emergency Response Plan so that it now defines the training requirements for the emergency planners. (Applicant Ex. 85, p. 7A; Skidmore, Tr. 12757-758) Staff review of this revision concludes that it conforms to Part P.1 of NUREG-0654. (Sears, Tr. 12639-640) The Board finds that this issue is now resolved.

344. Joint Intervenors' Exhibit 120 was also used to raise the question about whether the Applicant's Emergency Plan for conducting an independent annual review of emergency plans and procedures conforms to the criterion of Part P.9 of NUREG-0654. Governor Brown raised the same issue in written testimony. (Hubbard/Minor Testimony ff.

Tr. 12313, p. 9) The Applicant revised Procedure 2.1 of the Corporate Emergency Response Plan and Implementing Procedures such that it now requires that independent annual reviews of the emergency preparedness program be conducted by the Institute of Nuclear Power Operations (INPO). (Applicant Ex. 85, pp. 11-12) This revision was reviewed by the NRC Staff and found to conform to the criteria of Part P.9. (Sears Testimony ff. Tr. 12638, pp. 44-45; Tr. 12639-640) The Board concludes that this issue is now resolved.

345. Joint Intervenors objected that the County Board of Supervisors has not committed itself to pay for efforts to continue revising the plan and training participants. The Applicant, however, has committed itself to assure that the funds necessary to maintain preparedness are available. The Board finds that this gives reasonable assurance that the plan will be maintained and updated as necessary. (Skidmore, Tr. 11842-843)

346. FEMA has reviewed the offsite preparedness required under this standard and has no recommended corrective actions. (Eldridge Testimony ff. Tr. 12688, p. 16)

347. The Board concludes that it has reasonable assurance that Planning Standard b(16) has been adequately considered by the Applicant

and the County, and that it has been reviewed by the Staff and that it is capable of being implemented. The requirements of 10 CFR 50.47b(16) and the criteria of Part P of NUREG-0654 have been met by the Applicant and San Luis Obispo County.

B. Contention 10: Pressurizer Heaters

248. Contention 10 states:

The Staff recognizes that pressurizer heaters and associated controls are necessary to maintain natural circulation at hot standby conditions. Therefore, this equipment should be classified as "components important to safety" and required to meet all applicable safety-grade design criteria, including but not limited to diversity (GDC 22), seismic and environmental qualification (GDC 2 and 4), automatic initiation (GDC 20), separation and independence (GDC 3 and 22), quality assurance (GDC 1), adequate reliable on-site power supplies (GDC 17), and the single failure criterion. The Applicant's proposal to connect two out of four of the heater groups to the present on-site emergency power supplies does not provide an equivalent or acceptable level of protection.

349. The parties accepted the definitions of the terms "important to safety", "safety-related," and "safety-grade" as set forth in a memorandum and attachment dated November 20, 1981 from H. R. Denton to the NRC Staff. These documents are included as Attachment B to the Bridenbaugh/Minor Testimony following Tr. 11671; Tr. 11558-59; Bridenbaugh/Minor, pp. 5, 6.

350. Messrs. John B. Hoch, Robert A. Young and Glenn E. Lang presented testimony on behalf of the Applicant. (Hoch/Young/Lang Testimony ff. Tr. 11550) Mr. Walton L. Jensen, Jr. testified on behalf of the Staff. (Jensen Testimony ff. Tr. 11621). Messrs. Dale G. Bridenbaugh and Gregory C. Minor presented testimony on behalf of Governor Brown. (Bridenbaugh/Minor Testimony ff. Tr. 11671) Joint

Intervenors elected not to present testimony, but did cross-examine all witnesses.

351. The Commission requires, in Item II.E.3.1 of NUREG-0737, that emergency on-site power be supplied to the pressurizer heaters to obviate a possible unnecessary actuation of the emergency core cooling system, but defines the heaters as non-class I-E loads, which are not required to be qualified as safety grade. (Jensen Testimony, p.5; Tr. 11656; Hoch/Young/Lang Testimony ff. Tr. 11550, p.3).

352. Safety-grade structures, systems and components are required for the safety functions set forth in Section III.C of Appendix A to 10 CFR Part 100. These functions are those necessary to assure:

- a. The integrity of the reactor coolant pressure boundary;
- b. The capability to shut down the reactor and maintain it in a safe shutdown condition; or
- c. The capability to prevent or mitigate the consequences of accidents which could result in potential offsite exposures comparable to the guideline exposures of 10 CFR Part 100.

353. The pressurizer heaters are part of the normal control system which regulates primary system pressure. (Jensen Testimony ff. Tr. 11621, p. 2).

354. No particular safety function is served by maintaining the plant in a hot standby condition. (Jensen Testimony ff. Tr. 11621, p.4).

355. Operation of the pressurizer heaters is not required to place and maintain the system in a cold shutdown condition (below 200°F). (Jensen Testimony ff. Tr. 11621, pp.2, 3).

356. Pressure control in the reactor coolant system can be maintained by systems other than the pressurizer heaters, e.g., by using the charging and letdown or the high head safety injection systems, both of which are safety grade. (Hoch/Young/Lang Testimony ff. Tr. 11550, p. 2, Tr. pp. 11562, 11567).

357. Hot standby is a condition in which the reactor is subcritical by at least 1% in reactivity and the coolant temperature is above 350°F. Hot standby cannot be maintained indefinitely without use of the pressurizer heaters. (Jensen Testimony ff. Tr. 11621, pp. 2, 3).

358. The pressurizer heaters are not needed to maintain natural circulation in the Diablo Canyon plant system, and the system which does insure maintenance of natural circulation (water level in the steam generators) is qualified as a safety-grade system. (Jensen

Testimony ff. Tr. 11621, p. 4; Tr. p. 11655; Hoch/Young/Lang Testimony ff. Tr. 11550, p. 2).

359. The Staff has found the provision of emergency power at Diablo Canyon to be adequate for the purposes of the NUREG-0737 requirement. (Staff Ex. 25, SER Supp. 14, p. 2-20, 2-21).

Contention 12: Block and Power-Operated Relief Valves

360. Contention 12 states:

Proper operation of power-operated relief valves, associated block valves and the instruments and controls for these valves is essential to mitigate the consequences of accidents. In addition, their failure can cause or aggravate a LOCA. Therefore, these valves must be classified as components important to safety and required to meet all safety-grade design criteria.

Relief and Block Valves. Joint Intervenors contend that the present classification of Diablo Canyon relief valves and associated block valves, instruments and controls does not comply with 10 CFR Part 50, Appendix A, Reg. Guide 1.26 and SRP (Reg. Guide 1.70), Section 3.22. Joint Intervenors also contend that General Design Criteria 1, 14, 15 and 30 are violated because relief and block valves have not been qualified under all transient and accident conditions.

Proper operation of power operated relief valves, associated block valves and the instruments and control for these valves is essential to mitigate the consequences of accidents. The TMI accident demonstrated this fact. In addition, their failure can cause or aggravate a LOCA. Therefore, these valves must be classified as important to safety and required to meet all safety-grade design criteria. However, the Diablo Canyon block and relief valves do not meet all safety-grade design criteria, in violation of the regulatory practices listed above. In addition, reactor coolant system relief valves form part of the reactor coolant system pressure boundary. When relief valve operation is unreliable, series block valves are relied upon to maintain the integrity of the pressure boundary. Despite these important safety functions, appropriate qualification testing has not been done to verify the capabilities of these block valves to function during normal, transient and accident conditions. In the absence of such testing and verification, the public health and safety are endangered.

361. The parties accepted the definitions of the terms "important to safety," "safety-related," and "safety-grade" as set forth in a memorandum and attachment dated November 20, 1981 from H. R. Denton to the NRC Staff. These documents are included as Attachment B to the Bridenbaugh/Minor Testimony following Tr. 11671. (See also Tr. 11558-59; Bridenbaugh/Minor Testimony ff. Tr. 11671, pp. 5, 6).

362. Messrs. John B. Hoch, Thomas N. Crawford, Edward M. Burns, Robert M. Grayson and Raymond J. Skwarek presented evidence on behalf of the Applicant. (Hoch/Crawford Testimony ff. Tr. 11590; Burns, et al., Testimony ff. Tr. 11590). Mr. Walton L. Jensen testified on behalf of the NRC Staff. (Jensen Testimony ff. Tr. 11621)
Messrs. Dale G. Bridenbaugh and Gregory C. Minor presented testimony on behalf of Governor Brown. (Bridenbaugh/Minor Testimony ff. Tr. 11671)
Joint Intervenors presented no direct testimony, but did cross-examine all witnesses.

363. The pressurizers at Diablo Canyon are each equipped with three power-operated relief valves (PORV's) and three associated block valves. The function of the PORV's is to open at a lower pressure than that of the safety valves so as to preclude the opening of the safety valves during mild pressure transients. The function of the block valves is to isolate a leaking or failed-open PORV. (Jensen Testimony ff. Tr. 11621, p. 9; Applicant Ex. 5, Diablo Canyon FSAR, Chapter 5; Hoch/Crawford Testimony ff. Tr. 11590, p. 4)

364. Only one PORV is necessary to perform the intended pressure relief function. A second PORV is provided for redundancy. These PORV's are safety grade. The third PORV was installed to provide the capability for full load rejection without reactor trip. This PORV, which performs no safety-related function, is constructed to safety-grade standards with the exception of its instrumentation and controls. All three block valves are safety grade. (Hoch/Crawford Testimony ff. Tr. 11590, pp. 4, 5)

365. The additional instrumentation and controls on the safety-grade PORV's affect the ability of the valves to open, but does not affect the ability of the valves to close and remain closed. (Jensen, Tr. 11653, 654)

366. A Masoneilan series 20000 model PORV, representative of those used at the Diablo Canyon plant, has been tested by the Electric Power Research Institute (EPRI) in a program which included full-pressure steam, water, transition phase and loop seal conditions. The valve passed all test criteria. (Hoch/Crawford Testimony ff. Tr. 11590, p. 7)

367. A Velan model B10-3054B-13MS block valve was tested by EPRI under conditions representative of potential Diablo Canyon plant conditions. The valve fully opened and closed on demand. (Hoch/Crawford Testimony ff. Tr. 11590, p. 7)

368. Results of EPRI testing of relief and block valves are scheduled to be documented formally by EPRI by July 1982. The Applicant will submit plant-specific reports as required by the NRC, including qualification data on block valves and analyses of results of EPRI relief valve testing for applicability to the Diablo Canyon plant. (Hoch/Crawford Testimony ff. Tr. 11590, p. 8)

369. The valves were considered to be seismically qualified prior to the institution of the seismic reverification program. The Applicant is reviewing this qualification and has committed itself to whatever steps are necessary to maintain qualification of the valves. (Response of Pacific Gas and Electric Company to Joint Intervenors' and Governor Brown's Proposed Findings of Fact and Conclusions of Law, April 12, 1982, p. 5)

370. A failure of a PORV in the open position would cause the equivalent of a small-break LOCA. This would be terminated by the closure of the associated safety-grade block valve. (Jensen Testimony ff. Tr. 11621, p. 10; Hoch/Crawford Testimony ff. Tr. 11590, p. 6)

371. If an associated block valve failed to isolate a stuck-open PORV, the capability of the ECCS would be sufficient to permit safe shutdown of the reactor without the core being uncovered or damaged. (Jensen Testimony ff. Tr. 11621, p. 10; Staff Ex. 28, WCAP-9601,

Section 3.3 of Volume III; Hoch/Crawford Testimony ff. Tr. 11590, p. 7)

372. No evidence was presented which would indicate that operation of the PORV's and block valves is related to the capability of the operator to shut down and maintain the reactor in a safe shutdown condition. The PORV's and block valves are mentioned in a number of emergency operating procedures; however, the procedures are designed to assure that the operator makes maximum use of all systems during accidents, whether or not the system is qualified as safety grade. (Jensen Testimony ff. Tr. 11621, p. 12)

373. Proper operation of PORV's and block valves is not required to mitigate the consequences of any design basis accident considered in the FSAR. (Hoch/Crawford Testimony ff. Tr. 11590, p. 4; Jensen Testimony ff. Tr. 11621, pp. 9, 12, 14)

374. A safety-related function of the PORV's is to protect against low-temperature overpressurization. The two safety-grade PORV's perform that function, and operators are trained to use the appropriate valves when the reactor is at low temperature. (Crawford, Tr. 11607; Patterson, Tr. 11607)

VII. CONCLUSIONS OF LAW

The Board has considered the entire record in this proceeding and concludes as follows:

1. Onsite emergency preparedness for Diablo Canyon, Units 1 and 2 provides assurance that effective protective measures can and will be taken in the event of a radiological emergency.

2. The onsite emergency response plan for Diablo Canyon, Units 1 and 2 meets the requirements of emergency planning standards of Section 50.47(b) and Appendix E of 10 CFR Part 50.

3. In accordance with the Commission Regulations and practices, only the systems and components which perform the critical safety functions set forth in Section III.C of Appendix A to 10 CFR Part 100 need be classified as "safety-related."

4. The pressurizer heaters at Diablo Canyon do not perform any of the critical safety functions stated in Section III.C of Appendix A to 10 CFR Part 100 and need not, therefore, be classified as safety-related.

5. The block valves at Diablo Canyon do not perform any of the critical safety functions listed in Section III.C of Appendix A to 10 CFR Part 100 and need not, therefore, be classified as safety-related.

6. The PORV's at Diablo Canyon perform only one safety function, that of low-temperature overpressurization. Two of the PORV's are qualified to safety-grade standards; the other PORV, which is provided to allow full load rejection without reactor trip, is qualified safety-grade in all aspects except for an independent control mechanism.

7. Contentions 10 and 12 fail to raise an issue requiring a change in the classification of the pressurizer heaters, block valves or PORV's.

8. The activities authorized by this license can be conducted without endangering the health and safety of the public, insofar as the issues discussed herein are concerned.

9. The issuance of this license will not be inimical to the common defense and security or to the health and safety of the public.

10. The following conditions are to be met before the full-power license is issued:

(a) The Director of Nuclear Reactor Regulation shall verify that the 12 deficiencies in the San Luis Obispo County emergency plan which have been noted by FEMA have been corrected.^{31/}

^{31/} An itemized list of the 12 deficiencies as noted by FEMA is attached hereto as Appendix A.

(b) The Director of Nuclear Reactor Regulation shall obtain a written acquiescence by the appropriate State jurisdiction binding them to participate in those Standard Operating Procedures required to be followed by Federal Regulations.

(c) The Director of Nuclear Reactor Regulation must secure FEMA findings on the adequacy of the State Emergency Response Plan.

(d) The Director of Nuclear Reactor Regulation must verify that tone alerts or equivalent warning devices are operational in schools, hospitals and other institutions.

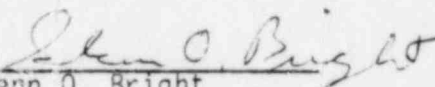
It is ORDERED, in accordance with the Atomic Energy Act of 1954, as amended, and the Commission's regulations, and based on the findings and conclusions set forth herein, that the Director of Nuclear Reactor Regulation is authorized to issue a full-power operating license for the Diablo Canyon Nuclear Plant, Units 1 and 2, consistent with the Board's decisions in this case, subject to the Commission's determination and order.

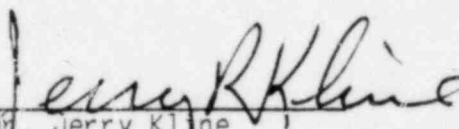
It is further ORDERED, in accordance with Sections 2.760, 2.762, 2.764, 2.785 and 2.786 of the Commission's Rules of Practice, that this Initial Decision shall not become effective until **30** days from the date that this Decision is transmitted to the Commission and shall constitute the final action of the Commission subject to review thereof under the above-cited rules.

Exceptions to this Initial Decision may be filed by any party within 10 days after service of this 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.

This Opinion and Order is issued with a caveat. It does not, nor is it intended to, impinge in any way on the status of the Commission's suspension of the Diablo Canyon Plant's low-power license (CLI-81-30; 14 NRC 9.50 (1981) or on the independent design verification program ordered by the Commission (id., at 955, 958).

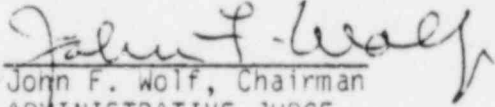
THE ATOMIC SAFETY AND
LICENSING BOARD


Glenn O. Bright
ADMINISTRATIVE JUDGE


Dr. Jerry Kline
ADMINISTRATIVE JUDGE

I do not join in those parts of the Board's Decision which relate to Contention 1 since they appear to me to be unacceptably prolix. However, I concur in the Board's conclusion that the issues raised by the Intervenor regarding the emergency plan were not proved in the record. I concur on the basis of the entire record that the Applicant's and the combined onsite, State and local emergency response plans and preparedness do comply with 10 CFR 50.33(g), 50.47 and revised Appendix E to Part 50.

I also concur in the Decision in so far as it relates to the remaining contentions, i.e., 10: Pressurizer Heaters and 12: Power-operated Relief and Block Valves.


John F. Wolf, Chairman
ADMINISTRATIVE JUDGE

Issued and entered at Bethesda,
Maryland, this 31st day of August 1982.

Appendix A

Corrective Actions Recommended by FEMA

Standard E

1. The technical specifications for design and maintenance of the proposed warning system should be submitted for preliminary review and approval by FEMA.

2. Pagers should be provided for alerting key County response personnel.

3. A reliable communications link consisting of both a two-way radio capability and a dedicated telephone line must be established between the EOC and the two Emergency Broadcast System stations. Communications lines to both radio station KVEC and radio station KSLY are required in order to provide full 24-hour coverage. Also, an agreement between the two radio stations and San Luis Obispo County regarding dissemination of emergency instructions to the public needs to be formulated.

4. The public warning system must be completed and operational in accordance with the NRC established deadline.

Standard F

5. The County radiological monitoring team members should be supplied with radios to establish a direct communications link to the County Unified Dose Assessment Center Supervisor.

Standard G

6. The public information program required under this planning objective must be carried out to ensure that emergency response instructions are made available to both resident and transient populations.

Standard H

7. The additional telephone capability needed for operations in the EOC should be established and those lines should be installed.

8. The EOC should have a backup power source to ensure continuing operations under conditions of a commercial power failure.

9. Develop and install a system that will allow the cities involved in the plume exposure zone to be kept informed of the developing situation from the EOC.

Standard K

10. Provisions must be made for the distribution of dosimeters, both self-reading and permanent record devices, to emergency workers. This equipment should be permanently located in the County.

Standard N

11. The annual drill and training schedule for the County should be established and activities under that schedule begun.

Standard O

12. Same as Standard N.

APPENDIX B

Exhibits

<u>State's Exhibit No. and Title</u>	<u>Received in Evidence</u>
7. SOP Development Status Report	Tr. 12110
8. State of California, Office of Emergency Services, "Emergency Planning Zone for Serious Nuclear Power Accidents," November 1980	Tr. 12522
9. Transmittal Ogden to Ness	Tr. 12553
10. County of San Luis Obispo, Department of Technical Services Five-Year Communication Plan, January 1982	Tr. 12685
 <u>Staff's Exhibit No. and Title</u>	
26. Quick Look Report for Semiscale, July 1981	Tr. 11623
27. Experiment Data Report for LOFT, August 1980, NUREG-CR-157	Tr. 11625
28. Report of Small Break Accident for Westinghouse NSSS System, Vol. III, Sec. 3.3	Tr. 11629
29. Report of Small Break Accidents for Westinghouse NSSS System, Vol. III, Sec. 4.2	Tr. 11630
30. Letter from Philip Crane to R. H. Engelken, January 13, 1982	Tr. 12569
31. SSER 15, October 22, 1981	Tr. 11973
32. Letter to F. Miraglia, Jr., Office of P. A. Crane, Jr., October 22, 1981	Tr. 11981
33. Letter to Mitzie Solberg from T. Urbanik, II, October 28, 1981	Tr. 11378
34. Letter from L. H. Munson to J. Sears, December 28, 1981, with attachment	Tr. 12648
35. Memo for B. Grimes from R. Krimm, December 29, 1981	Tr. 12695

<u>Joint Intervenors' Exhibit No. and Title</u>	<u>Received In Evidence</u>
119. Memo from J. Allen to N. Moseley, October 16, 1979	Tr. 11636
120. Applicant PG&E's response to Joint Intervenors First Set of Interrogatories	Tr. 11793
121. FEMA Guidance Memo #19	Tr. 12703
122. Letter to Board of Supervisors of San Luis Obispo County from M. Billig, January 13, 1982	Tr. 12255
123. Letter to Santos Arrona from C. Dahle, December 11, 1981	Tr. 12481
124. Memo from M. F. Reed, September 17, 1981	Tr. 12500
125. Letter to A. Cunningham from C. Palumbo, July 2, 1981	Tr. 12714
126. Memo for Record from J. Eldridge, December 8, 1980	Tr. 12716
127. FEMA Memos Dated September 9, 1981 and October 21, 1981, for T. Knight, J. L. Dehorty, etc.	Tr. 12718

Applicant's Exhibit No. and Title

70. Document Entitled "Emergency Shutdown"	Tr. 11683
71. Document Entitled "Reactor Trip With Safety Injection"	Tr. 11683
72. Document Entitled "Emergency Operating Procedure - Loss of Electrical Power"	Tr. 11684
73. Rev. 3 - Diablo Canyon Power Plant Emergency Plan	Tr. 11765
74. Diablo Canyon - Emergency Procedures, Vol. 3A	Tr. 11765
74A. " " " " " " , Vol. 3B	Tr. 11765
75. Diablo Canyon - Emergency Procedures as revised through January 15, 1982, Vol. 3A	Tr. 11765

<u>Applicant's Exhibit No. and Title</u>	<u>Received In Evidence</u>
75A. Diablo Canyon - Emergency Procedures as revised through January 15, 1982, Vol. 3B	Tr. 11765
76. Procedures EP-CAP-1, EP RB7, EP RB8 and EPG-1	Tr. 11765
77. PG&E Corporate Emergency Response Plan, Appendix A, Rev. 1, May 11, 1981	Tr. 12087
78. Evacuation Times Assessment for Diablo Canyon, September 1980	Tr. 11765
79. for identification, Earthquake Emergency Planning at Diablo, Vol. 1	-----
79A. for identification, Earthquake Emergency Planning at Diablo, Vol. 2	-----
79B. for identification, Earthquake Emergency Planning at Diablo, Vol. 3	-----
80. San Luis Obispo County Nuclear Power Plant Emergency Response Plan, Draft Plan, Rev. B, Parts I, II, IV, V, October 1981	Tr. 11765
80A. for identification, Transmittal from T. Ogden to T. Ness, November 17, 1981	-----
81. San Luis Obispo County, Cities Nuclear Power Plant Emergency Response Plan, Part III (Part 1), December 1981, (Draft)	Tr. 11765
81A. Same as 81, Part III (Part 2)	Tr. 11765
82. Emergency Plan & Operation Manual for Radiological Health Section of California Department of Health Services, Annex 2, Vol. I, August 1981	Tr. 11765
82A. RHS Emergency Plan - Implementing Procedures, Annex 2, Vol. II (files, maps)	Tr. 11765
83. Diablo Canyon Emergency Response Drill, August 1981 (videotape)	Tr. 11881
84. Evacuation Time Estimates	Tr. 12190
85. Response to J. I. Interrogatory 9, (First Set), January 21, 1982	Tr. 12772