
Safety Evaluation Report

related to the operation of
Diablo Canyon Nuclear Power Plant,
Units 1 and 2,

Docket Nos. 50-275 and 50-323

Pacific Gas and Electric Company

Supplement No. 15

**U.S. Nuclear Regulatory
Commission**

Office of Nuclear Reactor Regulation

September 1981



8110190831

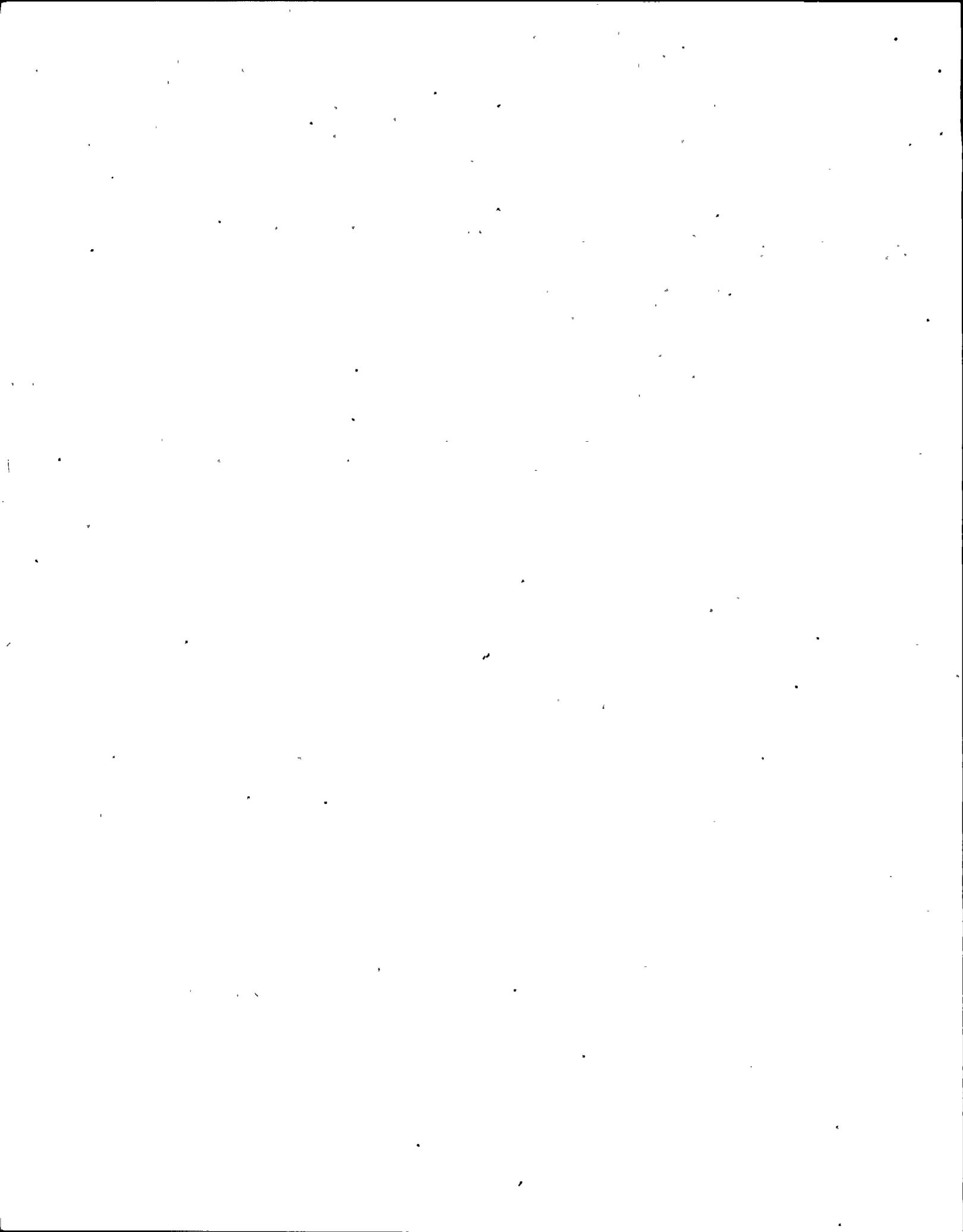
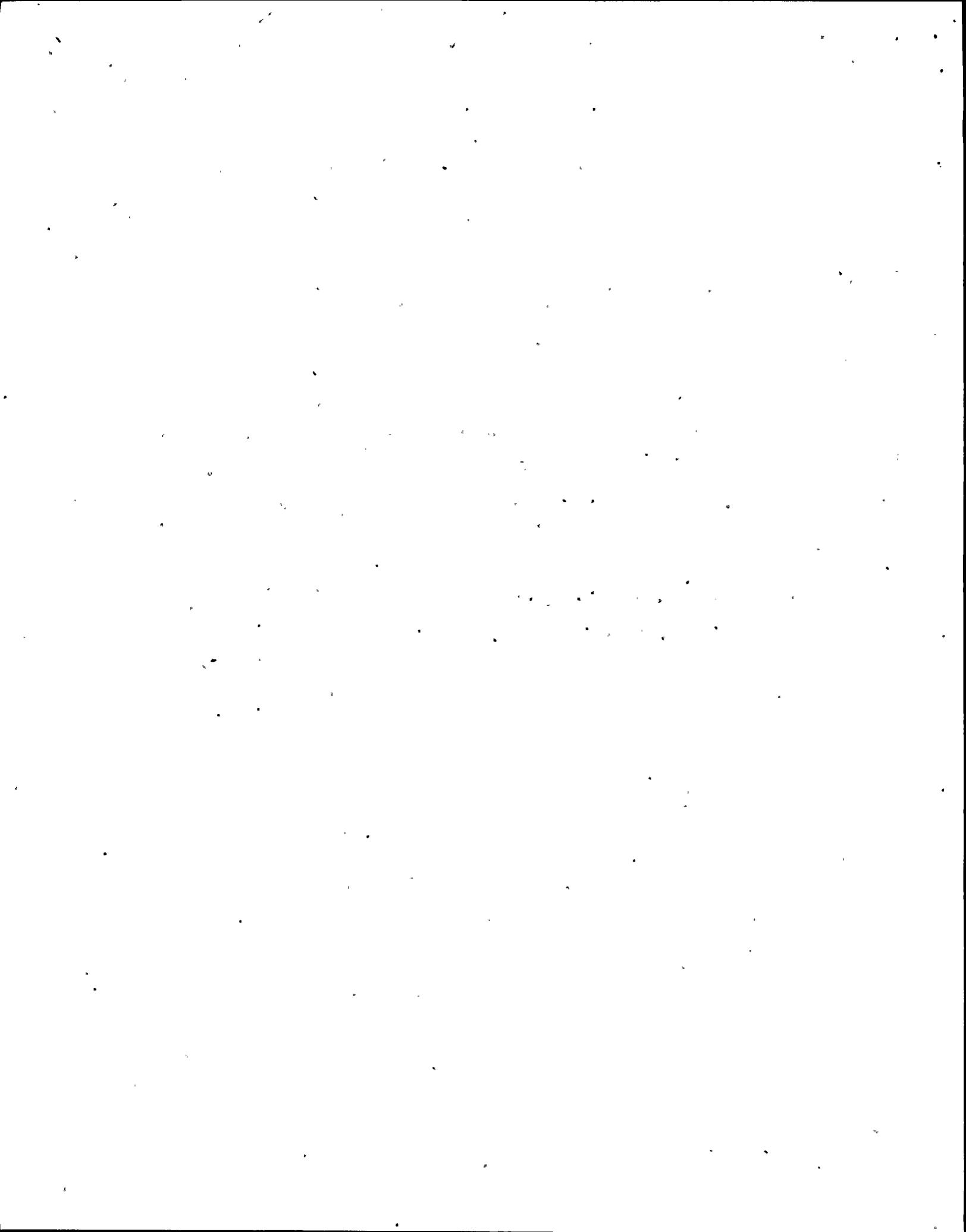


TABLE OF CONTENTS

	<u>Page</u>
1. INTRODUCTION AND GENERAL DISCUSSION.....	1-1
1.1 Introduction.....	1-1
7. INSTRUMENTATION AND CONTROL.....	7-1
7.8.2 Environmental Qualification of Safety-Related Electrical Equipment.....	7-1
APPENDICES	
A. CONTINUATION OF CHRONOLOGY.....	A-1
B. ENVIRONMENTAL QUALIFICATION OF SAFETY-RELATED ELECTRICAL EQUIPMENT.....	B-1



1. INTRODUCTION AND GENERAL DISCUSSION

1.1 Introduction

Supplement No. 13 to the Commission's Safety Evaluation Report (SER) in the matter of the Pacific Gas & Electric Company's application for an operating license for Diablo Canyon, Units 1 & 2, issued April 1981, stated that the matter of environmental qualification of safety-related electrical equipment would be addressed in a future SER Supplement.

In this supplement to the SER, we provide our evaluation of the above cited electrical equipment. Appendix A to this report is a continuation of the chronology of the staff safety review. Appendix B is a safety evaluation of the environmental qualification of safety-related electrical equipment for Diablo Canyon, Units 1 & 2.



7. INSTRUMENTATION AND CONTROL

7.8.2 Environmental Qualification of Class IE Electrical Equipment

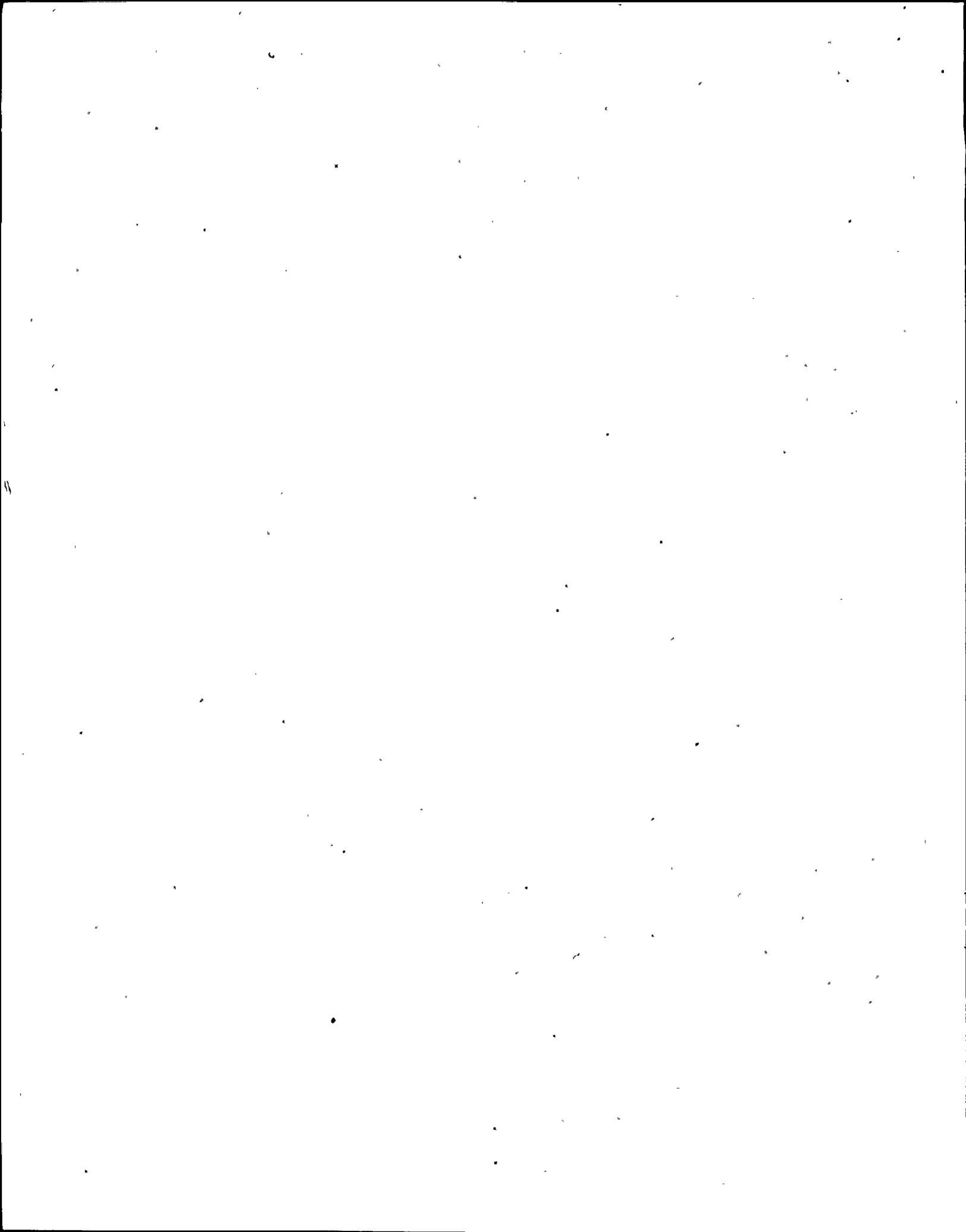
In Section 7.8.2 of Supplement No. 13 to the SER we stated that our evaluation of the environmental qualifications of safety-related electrical equipment would be addressed in a supplement to the SER. Our safety evaluation of this subject is given in Appendix B to this report.



APPENDIX A

CHRONOLOGY OF RADIOLOGICAL REVIEW

<u>Date Docketed</u>	<u>Description of Documents</u>
May 31, 1978	NRC issued IE Circular 78-08
February 8, 1979	NRC issued IE Bulletin IEB 79-01
October 11, 1979	NRC letter requesting additional information in regard to environmental qualification of Class IE equipment
February 19, 1980	NRC letter requesting additional information in regard to environmental qualification of Class IE equipment
February 21, 1980	NRC letter requesting additional information in regard to environmental qualification of Class IE equipment
February 29, 1980	NRC issued supplement to IE Bulletin IEB 79-01B
September 30, 1980	NRC issued supplement to IE Bulletin IEB 79-01B
October 24, 1980	NRC issued supplement to IE Bulletin IEB 79-01B
June 10, 1981	PG&E provided submittal on environmental qualification of Class IE equipment.
September 2, 1981	PG&E provided submittal on environmental qualification of Class IE equipment.



APPENDIX B
ENVIRONMENTAL QUALIFICATION
OF
SAFETY-RELATED ELECTRICAL EQUIPMENT

APPENDIX B
CONTENTS

	Page
1 Introduction	B-3
2 Background	B-3
2.1 Purpose	B-4
2.2 Scope	B-4
3 Staff Evaluation	B-4
3.1 Completeness of Safety-Related Equipment	B-4
3.2 Service Conditions	B-5
3.3 Temperature, Pressure, and Humidity Conditions Inside Containment	B-5
3.4 Temperature, Pressure, and Humidity Conditions Outside Containment	B-6
3.5 Submergence	B-6
3.6 Chemical Spray	B-7
3.7 Aging	B-7
3.8 Radiation (Inside and Outside Containment)	B-7
3.9 Outstanding Equipment	B-8
4 Qualification of Equipment	B-8
4.1 Equipment Requiring Immediate Corrective Action	B-9
4.2 Equipment Requiring Additional Information and/or Corrective Action	B-9
4.3 Equipment Considered Acceptable or Conditionally Acceptable	B-10
5 Conclusions	B-10
APPENDIX A Equipment Requiring Immediate Corrective Action	B-12
APPENDIX B Equipment Requiring Additional Information and/or Corrective Action	B-13
APPENDIX C Equipment Considered Acceptable or Conditionally Acceptable	B-15
APPENDIX D Safety-Related Systems	B-17

APPENDIX B
SAFETY EVALUATION REPORT BY THE
OFFICE OF NUCLEAR REACTOR REGULATION
EQUIPMENT QUALIFICATION BRANCH
FOR PACIFIC GAS AND ELECTRIC COMPANY
DIABLO CANYON UNITS 1 AND 2
DOCKET NO. 50-275, 323

ENVIRONMENTAL QUALIFICATION OF SAFETY-RELATED ELECTRICAL EQUIPMENT

1 INTRODUCTION

General Design Criteria 1 and 4 specify that safety-related electrical equipment in nuclear facilities must be capable of performing its safety-related function under environmental conditions associated with all normal, abnormal, and accident plant operation. In order to ensure compliance with the criteria, the NRC staff required all near-term Operating License (OL) applicants to reassess and evaluate their environmental qualification documentation for their safety-related electrical equipment.

2 BACKGROUND

On February 8, 1979, the NRC Office of Inspection and Enforcement (IE) issued to all licensees of operating plants (except those included in the systematic evaluation program (SEP)) IE Bulletin IEB 79-01, "Environmental Qualification of Class IE Equipment." This bulletin, together with IE Circular 78-08 (issued on May 31, 1978), required the licensees to perform reviews to assess the adequacy of their environmental qualification programs.

By letters dated October 11, 1979 and February 19 and 21, 1980, the NRC Office of Nuclear Reactor Regulation (NRR) requested Operating License applicants to review and evaluate the environmental qualification documentation for each item of safety-related electrical equipment and to identify the degree to which their qualification program complies with the staff's positions as described in NUREG-0588, "Interim Staff Position on Environmental Qualification of Safety-Related Electrical Equipment." The applicants were directed to provide a submittal reporting the results of this review.

Subsequently, Commission Memorandum and Order CLI-80-21 (issued on May 23, 1980) states that NUREG-0588 forms the requirements that licensees must meet regarding environmental qualification of safety-related electrical equipment in order to satisfy those aspects of 10 CFR 50, Appendix A, General Design Criterion (GDC) 4. This order requires that the licensees have qualified safety-related equipment installed in their plants by June 30, 1982.

Supplements to IEB 79-01B were issued for further clarification and definition of the staff's needs. These supplements were issued on February 29, September 30, and October 24, 1980, and were given to OL applicants for consideration in their review.

In response, to the staff request, the applicant provided equipment qualification information by letters dated June 10 and September 2, 1981.

2.1 Purpose

The purpose of this SER is to identify equipment whose qualification program does not provide sufficient assurance that the equipment is capable of performing the design function in hostile environments. The staff position relating to any identified deficiencies is provided in this report.

2.2 Scope

The scope of this report is limited to an evaluation of the equipment which must function in order to mitigate the consequences of a loss-of-coolant accident (LOCA) or a high-energy-line-break (HELB) accident, inside or outside containment, while subjected to the hostile environments associated with these accidents.

3 STAFF EVALUATION

The staff evaluation of the applicant's response includes an onsite inspection of selected Class IE equipment, audits of qualification documentation, and an examination of the applicant's report for completeness and acceptability. The criteria described in NUREG-0588 form the basis for the staff evaluation of the adequacy of the applicant's qualification program.

The staff performed audits of the applicant's environmental qualification program July 27-31, 1981 and August 31-September 4, 1981. The first audit consisted of a 30% review of the applicant's equipment. Several deficiencies were identified during the audit. The second audit consisted of 100% review of applicant's equipment. No major deficiencies were noted, and the applicant had corrected all deficiencies noted in the first audit.

3.1 Completeness of Safety-Related Equipment

In accordance with NUREG-0588, the applicant was directed to (1) establish a list of systems and equipment that are required to mitigate a LOCA and an HELB and (2) identify components needed to perform the function of safety-related display information, post-accident sampling and monitoring, and radiation monitoring.

The staff developed a generic master list based upon a review of plant safety analyses and emergency procedures. The instrumentation selected includes parameters to monitor overall plant performance as well as to monitor the performance of the systems on the list. The systems list was established on the basis of the functions that must be performed for accident mitigation (without regard to location of equipment relative to hostile environments).

The list of safety-related systems provided by the applicant was reviewed against the staff-developed master list.

Based upon information in the applicant's submittal, the staff has verified and determined that the systems included in the applicant's submittal are those required to achieve or support: (1) emergency reactor shutdown, (2) containment isolation, (3) reactor core cooling, (4) containment heat removal, (5) core residual heat removal, and (6) prevention of significant release of radioactive material to the environment. The staff therefore concludes that the systems identified by the applicant (listed in Appendix D) are acceptable.

Display instrumentation which provides information for the reactor operators to aid them in the safe handling of the plant was identified by the applicant. A list of all safety-related display instrumentation was provided. The staff is currently reviewing this list for completeness. The on-going review will determine whether additional equipment, if any, is needed to be qualified.

The applicant identified 43 types of equipment which were assessed by the staff. These 43 equipment types represent 20,384 individual equipment components. Of the 20,384, 20,264 (20,000 splices) are conditionally qualified, 89 are being replaced, and 31 are under review.

3.2 Service Conditions

Commission Memorandum and Order CLI-80-21 requires that the "For Comment" NUREG-0588 is to be used as the criteria for establishing the adequacy of the safety-related electrical equipment environmental qualification program. This document provides the option of establishing a bounding pressure and temperature condition based on plant-specific analysis identified in the applicant's Final Safety Analysis Report (FSAR) or based on generic profiles using the methods identified in these documents.

On this basis, the staff has assumed, unless otherwise noted, that the analysis for developing the environmental envelopes for Diablo Canyon Units 1 and 2 relative to the temperature, pressure, and the containment spray caustics has been performed in accordance with the requirements stated above. The staff has reviewed the qualification documentation to ensure that the qualification specifications envelope the conditions established by the applicant.

Equipment submergence has also been addressed where the possibility exists that flooding of equipment may result from HELBs.

3.3 Temperature, Pressure, and Humidity Conditions Inside Containment

The applicant has submitted the LOCA/MSLB profiles used for equipment qualification purposes. The peak pressure and temperature resulting from these profiles are as follows:

	⁰ <u>Max Temp (F)</u>	<u>Max Press (psig)</u>	<u>Humidity (%)</u>
LOCA	272	47	100
MSLB	344	47	100

The staff has reviewed these profiles and finds them acceptable for use in equipment qualification. That is, there is reasonable assurance that the actual temperatures and pressures for the postulated accidents will not exceed these profiles anywhere within the specified environmental zone (except in the break zone).

3.4 Temperature, Pressure, and Humidity Conditions Outside Containment

The applicant has provided the temperature, pressure, humidity, and applicable environment associated with an HELB outside containment. The following areas outside containment have been addressed:

- (1) Auxiliary building
- (2) Fuel handling building

The staff has used the screening criteria of saturation temperature (212 F^o near atmospheric pressure) to verify that the parameters identified by the applicant for HELB are acceptable.

3.5 Submergence

The maximum submergence levels inside containment have been established and assessed by the applicant. Unless otherwise noted, the staff assumed for this review that the methodology employed by the applicant is in accordance with the appropriate criteria as established by Commission Memorandum and Order CLI-80-21.

The applicant's value for maximum submergence is 96 ft 1 in. Equipment below this level was identified by the applicant. Some equipment with the potential for submergence was relocated above flood level. The applicant indicated that the remaining equipment with the potential for submergence will perform its function before becoming submerged, and that failure after submergence will not affect any other safety-related equipment or system or mislead an operator.

The applicant has determined by analysis that there is no potential for submergence of Class IE equipment outside containment. The staff has reviewed the applicant's information referenced in the Diablo Canyon FSAR pertaining to the potential for outside containment flooding; moreover we reviewed an example of the potential flooding scenario and the methodology used to calculate this potential.

On the basis of this review, the staff concludes that flooding of Class IE safety related electrical equipment outside of the containment has been adequately addressed, and the conclusions reached by the applicant are acceptable.

3.6 Chemical Spray

The applicant's FSAR value for the chemical concentration is 2000 ppm boron and sodium hydroxide injection, resulting in a pH greater than 8.8. In addition, the applicant's containment spray system is designed so that no single failure can occur that will result in additional sodium hydroxide being added which could increase the anticipated alkalinity of the chemical spray. The exact percent used by the vendor for qualification testing and the equality of test sprays have been verified by the applicant and are acceptable to the staff.

3.7 Aging

NUREG-0588 Category II delineates two aging-program requirements. Valve operators committed to IEEE Standard 382-1972 and motors committed to IEEE Standard 334-1971 must meet the Category I requirements of the NUREG. This requires the establishment of a qualified life, with maintenance and replacement schedules based on the findings. All other equipment must be subjected to an aging program which identifies aging-susceptible materials within the component. Additionally, the staff requires that the applicant:

- (1) Establish an ongoing program to review surveillance and maintenance records to identify potential age-related degradations, and
- (2) Establish component maintenance and replacement schedules which include considerations of aging characteristics of the installed components.

The applicant has established a limited qualified life for each equipment type through test and/or analysis and is currently involved in a program to extend and/or confirm the qualified life of the equipment. In addition, the applicant has developed a program for surveillance and maintenance to ensure that equipment will not degrade sooner than predicted. The staff has reviewed this program and finds it acceptable. Surveillance and maintenance program procedures are to be implemented before full-power operation. Until these procedures are implemented, aging will remain an open item. The applicant is requested to notify the staff when procedures are implemented.

3.8 Radiation (Inside and Outside Containment)

The applicant has provided values for the radiation levels postulated to exist following a LOCA. The application and methodology employed to determine these values were presented to the applicant as part of the NRC staff criteria contained in NUREG-0588 and in the guidance provided in IEB-79-01B, Supplement 2. The staff review determined that the values to which equipment was qualified enveloped the requirements identified by the applicant.

The value required by the applicant inside containment is an integrated dose range of 8.66×10^5 to 1.6×10^8 rads. The applicant has provided the analysis--including basis, assumptions, and sample calculation--used to determine the radiation levels. In addition, the applicant has provided the analysis--including basis, assumptions, and a sample calculation--to determine the effect of beta radiation on the equipment's gaskets and seals. The staff has reviewed the analyses and concludes that the applicant's overall approach should result in reasonable estimates of the radiation qualification values and is acceptable.

A required value range of 5.29×10^3 to 6.7×10^7 rads has been used by the applicant to specify limiting radiation levels equipment outside containment.

This value considers the radiation levels influenced by the source term methodology associated with post-LOCA recirculation fluid lines and is acceptable.

3.9 Outstanding Equipment

The applicant has performed a circuit analysis to provide assurance that failure of exempted equipment and equipment lacking complete documentation for qualification will not adversely affect any other safety function or mislead an operator. The staff has reviewed the information provided and concluded that interim operation with this equipment will not degrade the safety functions or inhibit accident mitigation systems or equipment in the unlikely event of exposure to an adverse environment.

Modifications as a result of the TMI Action Plan which have not been implemented will be qualified to meet NUREG-0588 Category I requirements at the time of installation or when the equipment is required to be operable, per the established schedule of NUREG-0737 ("Clarification of TMI Action Plan").

4 QUALIFICATION OF EQUIPMENT

The following subsections present the staff's assessment, based on the applicant's submittal, of the qualification status of safety-related electrical equipment.

The staff has separated the safety-related equipment into three categories: (1) equipment requiring immediate corrective action, (2) equipment requiring additional qualification information and/or corrective action, and (3) equipment considered acceptable if the staff's concern identified in Section 3.7 is satisfactorily resolved. An appendix for each subsection of this report provides a list of equipment for which additional information and/or corrective action is required.

4.1 Equipment Requiring Immediate Corrective Action

Appendix A identifies equipment (if any) in this category. The applicant was asked to review the facility's safety-related electrical equipment. The applicant's review of this equipment has not identified any equipment requiring immediate corrective action; therefore, no deficiency reports were submitted. In addition, in this review, the staff has not identified any safety-related electrical equipment which is not able to perform its intended safety function during the time in which it must operate.

4.2 Equipment Requiring Additional Information and/or Corrective Action

Appendix B identifies equipment in this category, including a tabulation of deficiencies. The deficiencies are noted by a letter relating to the legend for the qualification parameter or condition.

Legend

- R - radiation
- T - temperature
- QT - qualification time
- RT - required time
- P - pressure
- H - humidity
- CS - chemical spray
- A - material-aging evaluation; replacement schedule; ongoing equipment surveillance
- S - submergence
- M - margin
- I - HELB evaluation outside containment not completed
- QM - qualification method
- RPN - equipment relocation or replacement; adequate schedule not provided
- EXN - exempted equipment justification inadequate
- SEN - separate-effects qualification justification inadequate
- QI - qualification information being developed
- RPS - equipment relocation or replacement schedule provided

As noted in Section 4, these deficiencies do not necessarily mean that the equipment is unqualified. However, the deficiencies are cause for concern and require further case-by-case evaluation. The staff has determined that an acceptable basis to exempt equipment from qualification, in whole or part, has been provided by the applicant in its failure mode and effects analysis for all the equipment exempted from qualification using the criteria listed below. The applicant is, however, required to update the appropriate component evaluation work sheets as additional qualification information becomes available.

- (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.
- (2a) Equipment performs its function before its exposure to the harsh environment; and the adequacy for the time margin provided is adequately justified, and
- (2b) Subsequent failure of the equipment as a result of the harsh environment does not degrade other safety functions or mislead the operator
- (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.

4.3 Equipment Considered Acceptable or Conditionally Acceptable

Based on the staff review of the applicant's submittal, the staff identified the equipment in Appendix C as (1) acceptable on the basis that the qualification program adequately enveloped the specific environmental plant parameters, or (2) conditionally acceptable subject to the satisfactory resolution of the staff concern identified in Section 3.7.

For the equipment identified as conditionally acceptable, the staff determined that

- (1) The applicant has not completed the evaluation of plant equipment material to ensure that no known materials susceptible to degradation because of aging have been used.
- (2) Although the applicant has established a plant surveillance and maintenance program, implementation procedures have not been completed.

The applicant is, therefore, required to inform the staff of both completion of the aging program and implementation of the surveillance and maintenance program.

5 CONCLUSIONS

The staff has determined that the applicant's listing of safety-related systems and associated electrical equipment whose ability to function in a harsh environment following a postulated accident is complete and acceptable except as noted in Section 3 of this report. The staff has also determined that the environmental service conditions to be met by the electrical equipment in the harsh accident environment are appropriate, except as noted in Section 3 of this report.

The staff has reviewed the qualification of safety-related electrical equipment to the extent defined by this SER and has found no outstanding items which would require immediate corrective action to ensure the safety of plant operation. However, the staff has determined that several items of safety-related electrical equipment identified by the applicant for this review require additional information. This review was based on a comparison of the qualification values with the specified environmental values required by the design, which were provided in the applicant's summary sheets.

Subsection 4.2 identified deficiencies that must be resolved to establish the qualification of the equipment; the staff requires the applicant to update the CES when the noted deficiencies are resolved. The applicant has provided acceptable justification for operation of all unqualified or documentation-deficient equipment.

Subsection 4.3 identified acceptance and conditional acceptance based on noted deficiencies. Where deficiencies are noted, the applicant should update the CES when the deficiency is resolved.

Based on these considerations, the staff concludes that conformance with the above requirements and satisfactory completion of the corrective actions by June 30, 1982 will ensure compliance with the Commission Memorandum and Order of May 23, 1980. The staff further concludes that there is reasonable assurance of safe operation of this facility pending completion of these corrective actions. This conclusion is based on the following:

- (1) There are no outstanding items which would require immediate corrective action to assure safety of plant operation.
- (2) Some of the items found deficient have been or are being replaced or relocated, thus improving the facility's capability to function following a LOCA or HELB.
- (3) The harsh environmental conditions for which this equipment must be qualified result from low-probability events; events which might reasonably be anticipated during this very limited period would lead to less demanding service conditions for this equipment.
- (4) The applicant has provided justification for operation with unqualified components or documentation-deficient components.

APPENDIX A
EQUIPMENT REQUIRING
IMMEDIATE CORRECTIVE ACTION
(CATEGORY 4.1)

NO EQUIPMENT IN THIS CATEGORY

APPENDIX B

EQUIPMENT REQUIRING ADDITIONAL INFORMATION
AND/OR CORRECTIVE ACTION
(CATEGORY 4.2)

LEGEND:

Designation for Deficiency

- R - Radiation
- T - Temperature
- QT - Qualification time
- RT - Required time
- P - Pressure
- H - Humidity
- CS - Chemical spray
- A - Material aging evaluation, replacement schedule, ongoing equipment surveillance
- S - Submergence
- M - Margin
- I - HELB evaluation outside containment not completed
- QM - Qualification method
- RPN - Equipment relocation or replacement, adequate schedule not provided
- EXN - Exempted equipment justification inadequate
- SEN - Separate effects qualification justification inadequate
- QI - Qualification information being developed
- *RPS - Equipment relocation or replacement schedule provided

EQUIPMENT DESCRIPTION	MANUFACTURER	MODEL NO.	DEFICIENCY
Pressure Transmitter	Rosemount	1152	RPS
Pressure Transmitter	Barton	Lot 1	RPS ¹ (5)
Pressure Sensor	Barton	351	QI ¹ (1)
RTD	Sostman	11901B	RPS

*All components to be replaced by the applicant will be replaced with qualified components currently undergoing qualification testing.

¹See footnotes at end of Appendix.

EQUIPMENT DESCRIPTION	MANUFACTURER	MODEL NO.	DEFICIENCY
Differential Pressure Transmitter	Fischer & Porter	10 BI/C 10 BO/C	RPS RPS
Pressure Transmitter	Fischer & Porter	50EP1041	RPS
Electro-Hydraulic Actuator	ITT General Controls	NH92K6002E 2L80	QI ²
Solenoid Operator	Target Rock	79AB-001	QI ³
Motor Operator	Limitorque	I/C Class B	RPS
Hydrogen Recombiner			QI ³
Acoustic Monitor	TEC	1414	QI ³
Wide Range RTD			QI ³
Pressure Differential Transmitter	Barton	763 764	QI ⁴ QI ⁴
Hydrogen Monitor			QI ³
Victoreen			QI ³

¹Awaiting final test report on testing of sensor using oil fill.

²Awaiting test report on qualification of capacitor.

³New equipment item being added as a post TMI-2 revision.

⁴Item currently in vendor's qualification program. Documentation will be added upon completion.

⁵See NUREG-0675 Supplement 9 to the Diablo Canyon Units 1 and 2 Safety Evaluation Report for further requirements.

APPENDIX C

EQUIPMENT CONSIDERED ACCEPTABLE
OR CONDITIONALLY ACCEPTABLE
(CATEGORY 4.3)

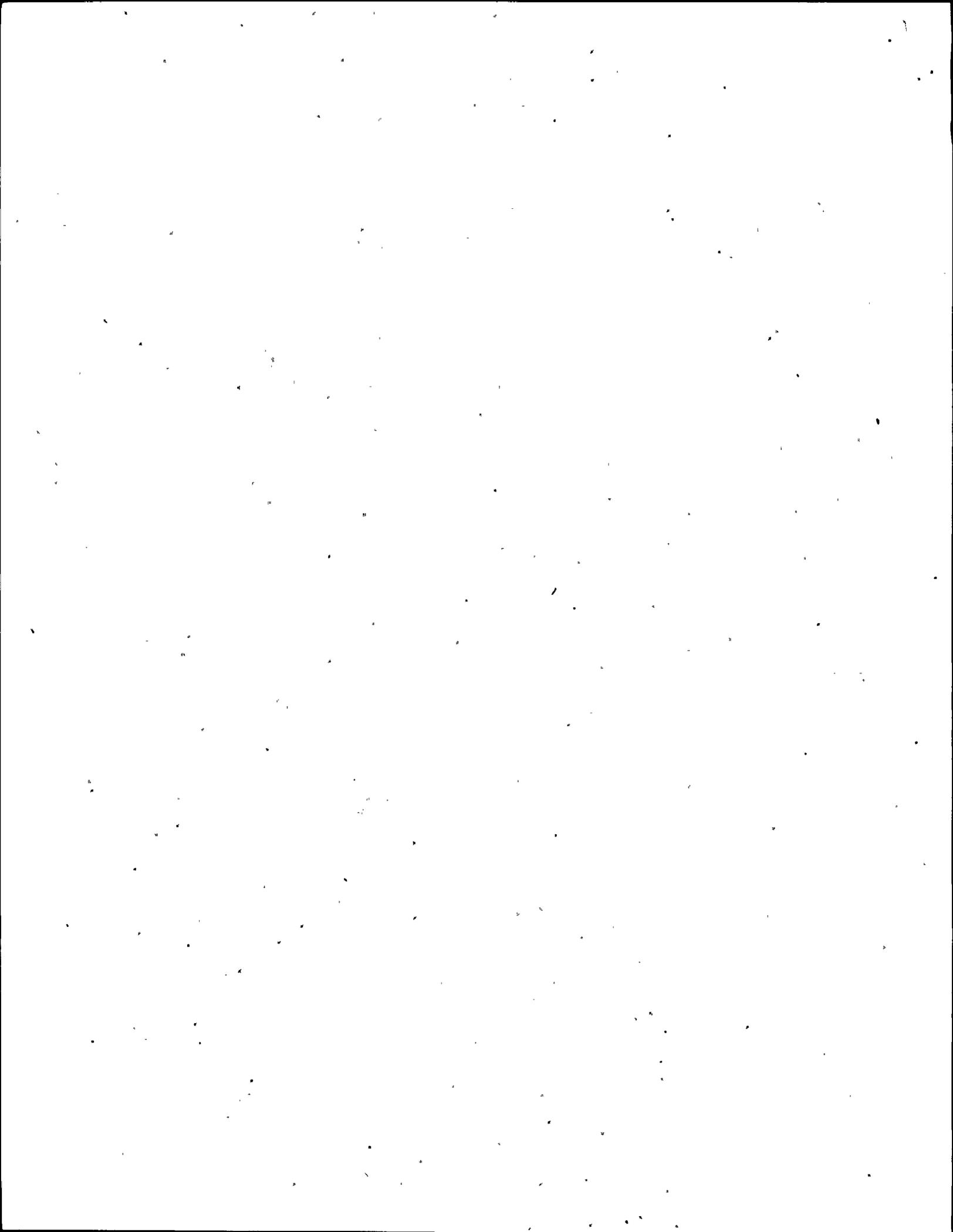
EQUIPMENT DESCRIPTION	MANUFACTURER	MODEL NO.	DEFICIENCY
Cable	Okonite	EPR/Hypalon	A
Containment Fan Cooler Motors	Westinghouse	Type CSP	A
Solenoid Operator	ASCO	2084483F NP831655V NP8316E35V NP831655E	A A A A
Limit Switch	NAMCO	EA-180	A
Solenoid Operator	Valcor	V526-5295-36	A
Solenoid Operator	ASCO	831655 8321A5	A A
Motor Operator	Limiterorque	SMC-04	A
Electrical Penetration	GE	100 Series	A
Signal & Thermocouple Cable	Continental	CC2193	A
Cable	Boston	Silicone/Hypalon	A
Cable	Raychem	Stilan	A
Cable	Okonite	Tefzel	A
Fan Cooler Cable	Boston	Silicone Braid Kapton Asbestos Hypalon	A A A A

EQUIPMENT DESCRIPTION	MANUFACTURER	MODEL No.	DEFICIENCY
Heat Shrink Splice	Raychem	WCSF-N	A
		NMCR	A
		NMCP5	A
		NPANL	A
		WCAP	A
		NTELS	A
Electrical Conductor Seal Assembly	Conax	N-11001	A
Conduit Seals	Q. Z. Gedney	CSBI	A
Electrical Cable	Rockbestos	Firewall III	A
Electrical Cable	ITT	Exane II	A
Cable	Raychem	Flametro1	A
Motor	Westinghouse	HSDP	A
Motor Operator	Limitorque	I/C Class H	A
Motor Operator	Limitorque	SMBO/C	A
Cable	Okonite	5KV	A
Motor Operator	Rotork	1H9A2	A
Indicating Switch	Barton	288A	A
RTD	Sostman	11834B-1	A
Motor	Westinghouse	ABDP	A

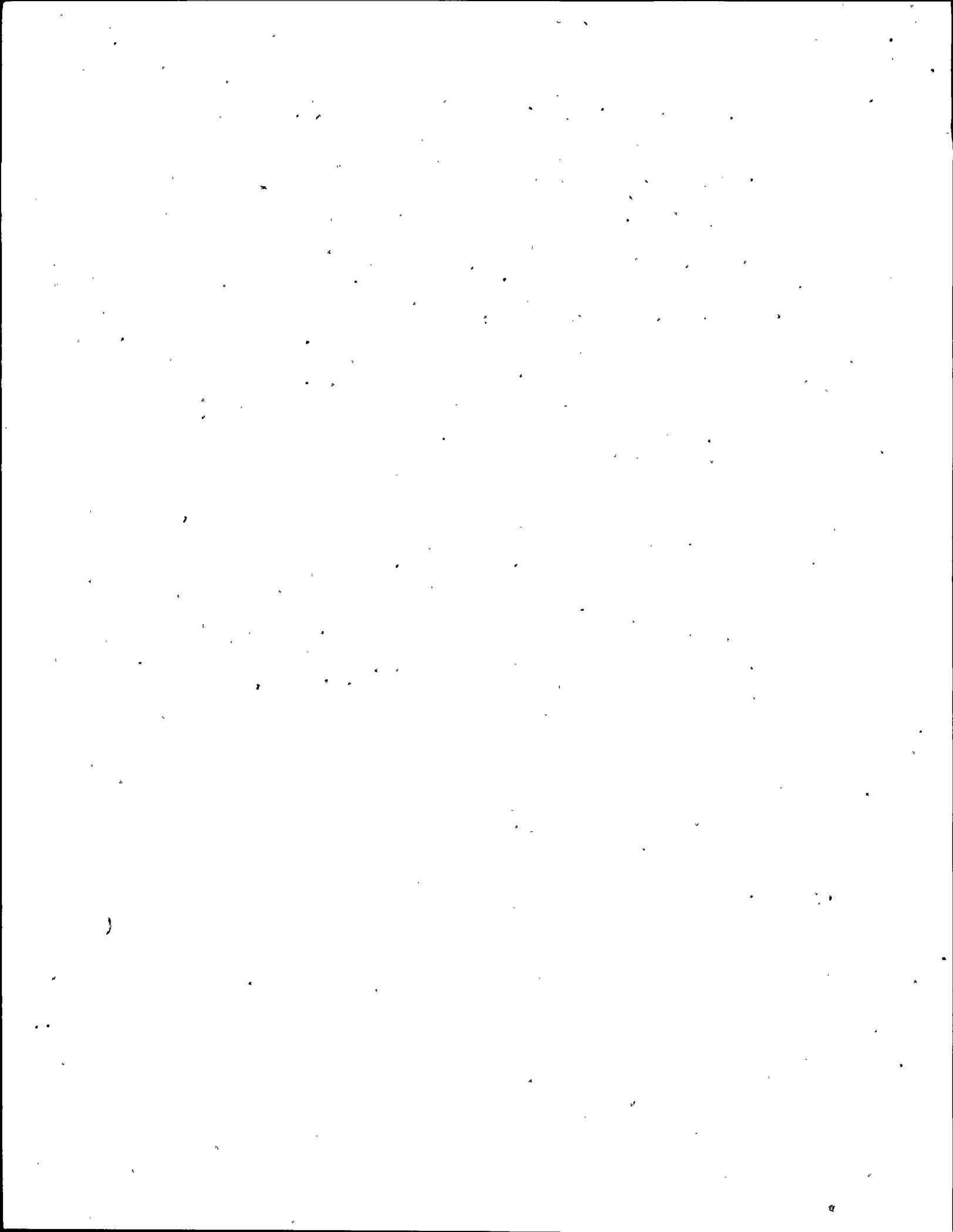
APPENDIX D
SAFETY-RELATED SYSTEMS¹

Function	System
Emergency Reactor Shutdown	Reactor Coolant Reactor Protection Safeguards Actuation Chemical and Volume Control
Containment Isolation	Main Steam Isolation Main Feedwater Isolation Containment Isolation Safety Injection Chemical and Volume Control Residual Heat Removal Containment Radiation Sampling
Reactor Core Cooling	Safety Injection
Containment Heat Removal	Residual Heat Removal Ventilation
Core Residual Heat Removal	Residual Heat Removal Reactor Coolant Main Feedwater Auxiliary Feedwater Main Steam Steam Dump Component Cooling Water Service Water
Prevention of Significant Release of Radioactive Material to Environment	Containment Fission Product Removal Containment Ventilation Containment Combustible Gas Control Containment Radiation Monitoring Containment Radiation Sampling
Supporting System	Emergency Power Safety Equipment Area Ventilation Control Room Habitability

¹The NRC staff recognized that these are differences in nomenclature of systems because of plant vintage and engineering design; consequently some systems performing identical or similar functions may have different names. In those instances it is necessary to verify the system(s) function with the applicant.



NRC FORM 335 (7-77)		U.S. NUCLEAR REGULATORY COMMISSION BIBLIOGRAPHIC DATA SHEET		1. REPORT NUMBER (Assigned by DDC) NUREG-0675 Supplement No. 15	
4. TITLE AND SUBTITLE (Add Volume No., if appropriate) Safety Evaluation Report Related to the Operation of Diablo Canyon Nuclear Power Plant, Units 1 and 2		2. (Leave blank)		3. RECIPIENT'S ACCESSION NO.	
7. AUTHOR(S)		5. DATE REPORT COMPLETED MONTH YEAR September 1981		DATE REPORT ISSUED MONTH YEAR September 1981	
9. PERFORMING ORGANIZATION NAME AND MAILING ADDRESS (Include Zip Code) Office of Nuclear Reactor Regulation U.S. Nuclear Regulatory Commission Washington, D.C. 20555		6. (Leave blank)		8. (Leave blank)	
12. SPONSORING ORGANIZATION NAME AND MAILING ADDRESS (Include Zip Code) Same as 9. above		10. PROJECT/TASK/WORK UNIT NO.		11. CONTRACT NO.	
13. TYPE OF REPORT		PERIOD COVERED (Inclusive dates)			
15. SUPPLEMENTARY NOTES Docket Nos. 50-275 and 50-323		14. (Leave blank)			
16. ABSTRACT (200 words or less) <p>Supplement No. 15 to the Safety Evaluation Report for Pacific Gas and Electric Company's application for licenses to operate the Diablo Canyon Nuclear Power Plant (Docket Nos. 50-275 and 50-323) located in San Luis Obispo County, California has been prepared by the Office of Nuclear Reactor Regulation of the Nuclear Regulatory Commission. Supplement No. 15 discusses the staff's evaluation of the environmental qualifications of safety-related electrical equipment.</p>					
17. KEY WORDS AND DOCUMENT ANALYSIS			17a. DESCRIPTORS		
17b. IDENTIFIERS/OPEN-ENDED TERMS					
18. AVAILABILITY STATEMENT Unlimited		19. SECURITY CLASS (This report) Unclassified		21. NO. OF PAGES	
		20. SECURITY CLASS (This page) Unclassified		22. PRICE S	



DOCUMENT REQUEST/CONTROL #04496

1-12

REQUESTER'S NAME

TELEPHONE NO.

MAIL STOP (If NRC Hq.)

HOLD FOR PICKUP

MAIL-RUN/STOP SYSTEM

ORGANIZATION (Division/Branch)

ADM

MAIL

MAILING INFORMATION (If other than NRC Hq.)

FOR DISTRIB. SVS. USE ONLY

NAME

REQUEST RECEIVED BY

TELEPHONE

ORGANIZATION

MAIL

STREET ADDRESS

WALK-IN

CITY

STATE

ZIP CODE

DOCUMENT PICKED UP

MATERIAL REQUESTED

INVENTORY BOX NO.

LOC.

SE- QUENCE

DOCKET AND/OR PUBLICATION NUMBER

NUMBER OF COPIES

NUREG 0675 S15

2226

1

