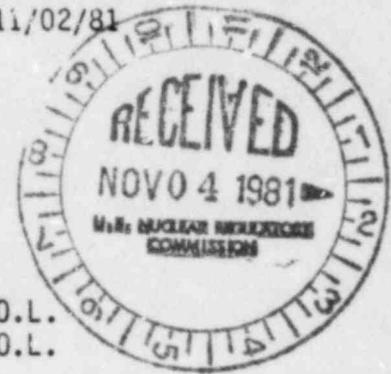


11/02/81

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD



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

Docket Nos. 50-275 O.L.  
50-323 O.L.

NRC STAFF'S RESPONSE TO GOVERNOR EDMUND G. BROWN JR.'S  
SECOND SET OF INTERROGATORIES

INTERROGATORY I

In the Staff Response, it is stated that the purpose of the Staff's December 16, 1980 letter to PG&E was to ensure that the Applicant's emergency plan had adequately taken into consideration the complications from an earthquake which are discussed in that letter.

A. Is it the Staff position that Revision 3 of the PG&E Emergency Response Plan adequately takes into consideration the items discussed in the December 16, 1980 letter?

B. What criteria has the Staff used to determine whether the Applicant's Emergency Response Plan or any other documents or materials of Applicant adequately take into consideration the items discussed in the December 16 letter?

C. If it is the Staff position that Revision 3 to PG&E's Emergency Response Plan constitutes an adequate response to the NRC Staff's letter of December 16, 1980, provide the bases for that position, including citations to those portions of the plan which the Staff relies upon as

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providing adequately for the complicating effects of an earthquake. Describe all documents which form a basis for or relate in any way to your answer to this Interrogatory 1.

D. At page 12 of the Staff Response, the Staff states that it "is satisfied that PG&E has adequately addressed the complicating effects that an earthquake may pose in the event the Emergency Plan has to be implemented in response to a radiological emergency."

- (1) What is the basis for the foregoing statement?
- (2) What analyses has the Staff performed or is the Staff performing to reach the foregoing conclusion?
- (3) What criteria is the Staff utilizing to reach its conclusion?

#### RESPONSE

A. The Staff position is that Revision 3 of the PG&E Emergency Response Plan, when taken together with the three-volume study and plan, "Earthquake Emergency Planning at Diablo Canyon" dated September 2, 1981, by the TERA Corporation, adequately takes into consideration the items in the December 16, 1980 letter.

B. The criteria are the basic planning standards in the emergency planning regulation (10 CFR § 50.47(b)).

C. The bases for the Staff position are that the documents referred to in Response 1.A., above, adequately address availability of resources and personnel to augment onsite staff, transit to and among emergency response facilities and communications with offsite organizations.

The pertinent portions of the documents are in Appendix E of the Emergency Plan and Volume 1 of Earthquake Emergency Planning at Diablo Canyon.

- D (1). See Response 1.C., above.
- (2). See Response 1.C., above.
- (3). See Response 1.C., above.

INTERROGATORY 2

At pages 2 and 3 of the Staff Response, it is indicated that Mr. John Sears spoke with PG&E and TERA Corporation employees on May 19, 1981 and September 11, 1981. For each discussion, what was discussed and who initiated these conversations? Did Mr. Sears make any notes of or in any way keep any record of these discussions? If so, describe these notes or other documents.

RESPONSE

Mr. Sears initiated the discussion on May 19. The schedule for submittal of the Applicant's analysis of earthquake effects was discussed.

The September 19 discussion was initiated by Mr. Davis who discussed in general the content of the TERA documents. No notes on either discussion were kept.

INTERROGATORY 3

Describe all analyses, reviews and other documents of the NRC Staff which relate in any way to the TERA Corporation analyses submitted by PG&E in early September 1981.

RESPONSE

The TERA documents have been reviewed by Mr. Sears and there are no written analyses.

INTERROGATORY 4

In the TERA Report prepared for PG&E, the contractor assumes a maximum acceleration at the plant of slightly under 0.5g. This is significantly less than the 0.75g peak free field acceleration assumed for the SSE in the Diablo Canyon seismic proceeding.

A. Does the Staff believe that accelerations up to the 0.75g postulated for the M 7.5 SSE should be assumed by PG&E in analyzing the complicating effects of an earthquake? Provide the basis for your response.

B. Does the Staff agree with the TERA selection of under 0.5g as the maximum acceleration to be postulated for the "severe" earthquake mentioned in the Staff's December 16, 1980 letter to PG&E? Provide the basis for your response.

RESPONSE

A. The Staff does not believe that accelerations up to 0.75g postulated for the M 7.5 SSE need be assumed by PG&E in analyzing the complicating effects of an earthquake. The bases for this are: (1) the 0.75g peak acceleration assumed in the Diablo Canyon seismic proceeding was the basis for the design of reactor systems and components for seismic qualification, and not for emergency planning; and (2) since it is the availability of resources and facilities to deal with a spectrum of possible damage in the event of a severe earthquake which was to be addressed, the capability of such resources and facilities to function can be evaluated based upon the peak accelerations postulated by TERA.

B. The Staff agrees that the Applicant's analyses of severe earthquake effects on transportation and communications facilities adequately responds to the Staff's concern. The basis for this is that the earthquake postulated by TERA is severe enough to require assessment of and planning for the key communication and transportation networks which may be affected by a severe earthquake in the vicinity of the Diablo Canyon Nuclear Power Plant.

INTERROGATORY 5

At page 4 of the Staff Response, the NRC Staff states that PG&E's Evacuation Time Assessment for Diablo Canyon Nuclear Power Plant is "satisfactory."

A. What Staff analyses have been performed by or for the Staff regarding this evacuation time assessment and what is the basis for the Staff's position that this Applicant response is satisfactory?

B. Describe all documents which relate in any way to the PG&E assessment.

RESPONSE

A. The basis for the Staff statement that the Applicant's response is satisfactory is that the response satisfies the criteria of 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, specifically, Section 11.J. and Appendix 4. The analysis was performed by a contractor - the Texas Transportation Institute of the Texas A&M University System.

B. The document is an October 28, 1981, letter report from Thomas Urbanik II, of the Texas Transportation Institute, to Mitzi Solberg, of the NRC Staff which rates the PG&E submittal excellent in every respect.

INTERROGATORY 6

At page 4 of the Staff response, the Staff states its position that the system for notifying in Montana de Oro State Park is satisfactory.

A. What analyses have been performed of this system for notifying persons in that State Park?

B. What is the basis for the Staff's position? If the sole basis for the Staff's position is Section 7.2-2 of the PG&E Emergency Plan, please so state.

RESPONSE

A. The Staff reviewed the description and the drawings in the Emergency Plan of the warning system and discussed the warning system with the supplier, and also discussed notification with the Montana de Oro State Park Ranger and the San Luis Obispo County Sheriff. The system for ratification is also being reviewed by FEMA.

B. The bases for the Staff position are included in the answer to 6(A).

INTERROGATORY 7

At page 5 of the Staff Response, the Staff states that it believes that the location of PG&E's real time monitors is satisfactory.

A. What is the basis for this Staff position and what analyses have been performed by or for the Staff? Describe all documents which relate in any way to the location of the reactor time monitors.

B. Has the Staff considered requiring more real time monitors outside of the plant boundaries, but inside the 6-mile low population zone? Explain the rationale for your response.

RESPONSE

A. The location of the real time monitors is indicated on Figure 7.3-4 of the Emergency Plan, and the use of the monitors is described in Section 7.3.2.2 and 7.3.1.9 of the Emergency Plan. The Staff's review of this information formed the basis for the Staff's judgment.

Offsite real time monitors are not required by the NRC Staff, under applicable regulations and guidelines.

INTERROGATORY 8

At page 5 of the Staff Response, the Staff states that it believes the alternate evacuation route to the North through the Field Ranch is satisfactory.

- A. What is the basis for this position?
- B. What analyses have been performed by or for the Staff to reach this position?
- C. What criteria were applied by the Staff in determining whether the alternative evacuation route is satisfactory?
- D. Does the Staff contend that the northern evacuation route will be available for use in wet or rainy weather?
- E. Describe all documents which relate in any way to the northern evacuation route.
- F. Identify all Staff personnel who have traversed the entire northern evacuation route.

RESPONSE

A. The Staff's reconnaissance of the route formed the basis for the Staff's judgment.

B.&C. The Staff's professional judgment was the basis for declaring the route satisfactory.

D. The Staff judges that if rainy weather has made the northern route impassable by vehicle, able-bodied persons would be able to walk.

E. One document relating to this route is in Appendix 7 to the Emergency Plan, Revision 2.

F. John Sears has traversed the entire northern route.

#### INTERROGATORY 9

At page 5 of the Staff Response, the Staff states its position that "the provisions for communications and transport are satisfactory."

A. What is the basis for this position?

B. What analyses have been performed by or for the Staff to reach this position?

#### RESPONSE

A. The bases for this position are that if land lines are unavailable for communication, radio is available; and if land routes are not navigable, transport to the plant is possible by helicopter.

B. The Staff has reviewed the applicant's submittal.

#### INTERROGATORY 10

At page 7 of the Staff Response, the Staff takes the position that the PG&E criteria for guiding PG&E employees regarding when to recommend evacuation versus sheltering are satisfactory.

- A. What is the basis for this Staff position?
- B. What analyses have been performed by or for the Staff regarding this position?
- C. In the event of a M 7.5 earthquake on the Hosgri fault, does the Staff believe that sheltering will continue to be a viable protective action throughout San Luis Obispo County? Explain the basis for your position.

RESPONSE

A. The Staff has reviewed the Applicant's implementing procedures for recommending shelter or evacuation and judges that these procedures comply with the guidance in NUREG-0654, Appendix 1.

B. The Staff compared the Applicant's submittal with the guidance in NUREG-0654.

C. In the event of a 7.5 Earthquake on the Hosgri fault, the reactor could be shut down safely. In the event of release of any radioactivity, the licensee would rely on information from offsite authorities as to whether shelter would be a viable protective action.

INTERROGATORY 11

At page 7 of the Staff Response, the Staff makes the following statement:

The NRC Staff position is that the public information program is satisfactory, the Staff will review, with FEMA, a draft of the public information material and that distribution of the material will be made prior to issuance of a full power license.

A. What is the basis for the Staff position that the public information program is satisfactory?

B. What Staff review was made of the public information program prior to providing the above quotation in the Staff Response?

C. What documents were reviewed or available to the Staff prior to making the above quoted statement in the Staff Response?

RESPONSE

A. The basis for the staff position is Staff review of the description of the program in the Emergency Plan and review of the draft material.

B. The Staff review of 11.A. was performed prior to providing the quotation in the Interrogatory.

C. Drafts of all of the documents to be used in the program were reviewed prior to making the above-quoted statement.

INTERROGATORY 12

Attached to the Staff Response was a May 18, 1981 Memorandum from Mr. William J. Dircks to J. C. Mark, Chairman of the Advisory Committee on Reactor Safeguards. At page 2 of that Memorandum, the following statement is made:

We have concluded that additional requirements, such as the design of additional facilities, structures, and systems to specifically withstand earthquakes are not necessary. In particular, no special seismic design of public notification systems, environmental monitoring capabilities or communications equipment is contemplated. A seismic event coincident with a significant accident at the plant is a very low likelihood. In addition, moderate seismic events would likely create a scenario

in which events slowly develop prior to the occurrence of a radioactive release. Sufficient time would be available for existing backup or alternate means of notification and monitoring to be effective. (emphasis supplied).

A. Provide all analyses and documents which provide the basis for or support the foregoing statement, including, in particular, those portions which are emphasized.

B. Identify all Staff members who worked on, contributed to, or otherwise participated in the foregoing statement.

C. Provide any analyses or other documents which relate the foregoing statement to the site-specific conditions and projected events at Diablo Canyon.

D. Has the Staff calculated the likelihood, i.e., probability, of a significant accident at Diablo Canyon (or any other plant) coincident with a seismic event? If so, describe and produce such calculations.

#### RESPONSE

A. The documents are the affidavits of Brian Grimes, NRC in the San Onofre Units 2&3 hearing before the Atomic Safety and Licensing Board dated June 22, 1981 and August 4, 1981.

B. Brian Grimes and John Sears contributed to the foregoing statement.

C. There are no other analyses or other documents which relate to the foregoing statement to the site-specific conditions and projected events at Diablo Canyon.

D. No. The Staff has not calculated the likelihood, i.e., probability, of a significant accident at Diablo Canyon (or any other plant) coincident with a seismic event.

INTERROGATORY 13

In the Dircks Memorandum quoted in the preceding Interrogatory, reference is made to a March 16, 1981 ACRS Memorandum.

- A. Provide a copy of the March 16, 1981 ACRS Memorandum.
- B. Provide copies of all other correspondence and other documents by or between the ACRS and the Staff concerning emergency planning at nuclear facilities during and after natural events.

RESPONSE

- A. Attached is a copy of the March 16, 1981 ACRS Memorandum.
- B. With regard to providing other correspondence and other documents by or between the ACRS and the Staff concerning emergency planning at nuclear facilities during and after natural events, attached is a May 18, 1981 Memo from Dircks to Mark.

INTERROGATORY 14

At page 8 of the Staff Response, it is stated that the draft NRC inspection report (presumably that for the August 19, 1981 exercise) was in the process of being finalized.

- A. Describe that inspection report and its conclusions.
- B. Produce that document for inspection and copying.

RESPONSE

- A.&B. Attached is a copy of the inspection report.

INTERROGATORY 15

At page 17 of the Staff Response, the Staff states that the UHF and VHF radio systems at Diablo Canyon "would be expected to be operational for the OBE and SSE."

- A. What is the basis for the foregoing Staff statement?
- B. What analyses have been prepared by or for the Staff to support this statement?

RESPONSE

- A. The basis for the Staff statement is that if land lines were lost, radio which does not depend on land lines would be available.
- B. The Staff analysis consisted of a review of the TERA analysis of communications.

INTERROGATORY 16

At page 24 of the Staff Response, the Staff states that the TSC, OSC, and interim EOF meet the "intent" of the guidance of NUREG-0696.

- A. By the foregoing response, does this mean that the Staff does not take the position that the foregoing facilities meet the reliability requirements of NUREG-0696?
- B. What is meant by "intent"?

RESPONSE

A. The reliability criteria of NUREG-0696 refer to the permanent emergency response facilities for which the full implementation date is October 1, 1982.

B. The objectives of the emergency response facilities are described in NUREG-0696 and in the Staff judgment, the interim facilities for Diablo Canyon meet the intent of those objectives in that the functions called for can be performed in the facilities.

INTERROGATORY 17

At page 24 of the Staff Response, the Staff states that the EOF and UDAC may not remain fully functional during an earthquake. The Staff goes on to note, however, that the assessment and communications functions will be performed at the TSC or the control room.

A. How would assessment and communications functions by and with the County be accomplished in the event that the EOF and UDAC were not available?

B. Describe the analyses and other documents which document that assessment and communications functions would still be accomplished in the event that these facilities were not available?

RESPONSE

A.&B. If the EOF and UDAC were not available, assessment would continue to be done in the control room and TSC since these locations are the source

of all information transmitted to the EOF and UDAC. Communications by radio to county personnel would be available.

INTERROGATORY 18

At page 24 of the Staff Response, the Staff takes the position that the interim EOF does not need to meet the criteria of NUREG-0695 of being "well engineered for the design life of the plant."

- A. What is the basis for this Staff position?
- B. What analyses have been performed to ensure that the interim EOF is in fact adequate?

RESPONSE

A. The criteria for interim Emergency Response Facilities are stated in NUREG-0694 which does not include the criterion of being "well engineered for the design life of the plant.

B. The Staff examined the interim EOF in visits before the exercise and during that exercise.

INTERROGATORY 19

At page 25 of the Staff Response, the Staff states that it is its position that the emergency procedures for Diablo Canyon are adequate to respond to an emergency.

- A. Describe all analyses which have been performed by or for the NRC Staff on the PG&E emergency procedures.

B. What is the basis for the Staff's position?

RESPONSE

A. The Emergency Planning Licensing Board has reviewed the procedures submitted by the applicant.

B. It is the Staff's professional judgment that the procedures provide adequate and clear direction to the person(s) called up to implement them. Further audit of the emergency procedures will be performed by NRC Inspection & Enforcement personnel during the final pre-operational inspection prior to full power operation.

INTERROGATORY 20

At page 5 of the Joint Intervenors' Response, the Staff indicates that the Staff's final conclusions on Diablo Canyon emergency preparedness would be set forth in SER Supp. 15. They were not.

A. Which SER Supplement will contain the Staff's final conclusions?

B. When does the Staff intend to publish this Supplement?

RESPONSE

A. Supplement 16 will contain the Staff's final conclusions.

B. The Staff intends to publish this Supplement after receipt of the FEMA evaluation of State and local plans.

INTERROGATORY 21

At page 7 of the Joint Intervenors' Response, the Staff states that it does comply with Section 50.47 of the NRC Regulations.

- A. What is the basis for this Staff position?
- B. What analyses or other documents provide the basis for this Staff position?

RESPONSE

A. The basis for the Staff statement on page 7 is that the onsite and offsite emergency response plans must satisfy 10 CFR § 50.47 prior to full power operation.

B. The documents which will provide the basis for the Staff position are the Applicant's Emergency Plan, reviewed by the NRC Staff, and state and local plans, reviewed by FEMA.

INTERROGATORY 22

At pages 12 and 13 of the Joint Intervenors' Response, the Staff sets forth generally its position on how emergency plans should compensate for the potentially complicating effects of an earthquake. As pointed out by the Staff, it is possible that an earthquake might occur which does not cause or occur simultaneously with an accident and radiological release at Diablo Canyon, but rather does interfere with elements of emergency planning and preparedness, for example, communications systems and/or evacuation routes.

A. In the event an earthquake occurs which disrupts communications and/or evacuation and transportation facilities, does the Staff believe that the plant should be shut down until there is restoration of communication and transportation facilities?

B. Please explain the basis for your position and describe any documents relating thereto.

RESPONSE

A.&B. The reactor plant would be shut down in the event of a severe earthquake. The decision to restart would be reviewed by the NRC Staff before restart.

INTERROGATORY 23

At page 12 of the Joint Intervenors' Response, the Staff states that an Applicant should assume "that the plant will experience earthquake effects of the type normally experienced in the geographical region where the plant is situated."

A. Does the Staff believe that faults other than the Hosgri fault (for example, the Rinconada fault) should be examined since it is in the same geographical region where the plant is located?

B. Provide the basis for the Staff's position.

C. If the Staff does believe other faults should be analyzed, which are they and what accelerations does the Staff predict from such other faults?

RESPONSE

- A. No.
- B. See Response 4A & B.
- C. Not applicable.

INTERROGATORY 24

At page 23 of the Joint Intervenors' Response, the Staff states that a decision to order evacuation or sheltering will be made "before any release of radioactivity occurs. . . ."

- A. What is the basis for the foregoing statement?
- B. Describe all analyses or other documents which address this matter.

RESPONSE

A. We are unable to find the referenced statement on page 23 of the Joint Intervenor's Response. The basis for the concept that the Applicant's staff would recommend protective actions before any release of radioactivity occurs lies in the applicant's compliance with Appendix 1 of NUREG-0654 which directs the operation of a nuclear plant to assess and declare the emergency upon the basis of measureable and observable indications in the control room, not on the basis of offsite monitoring of an effluent release.

- B. NUREG-0654 and the PGE Emergency Implementing Procedures.

INTERROGATORY 25

Does the Staff agree that the Diablo Canyon pressurizer heaters and related structures, instruments, systems and power sources are properly classified as non-safety grade? Provide the basis for your position and describe all documents which relate in any way to the classification question.

RESPONSE

Operation of the pressurizer heaters at Diablo Canyon is not a critical safety function and therefore the heaters are not required to be designed to safety grade criteria. The heaters are located within the pressurizer which is designed to safety grade criteria in accordance with its function as part of the reactor system pressure boundary. The heaters have the capability of being connected to safety grade power sources as discussed in Section II.E.3.1 of Supplement 14 to the NRC SER for Diablo Canyon.

The critical safety functions which must be provided by safety grade systems are identified in Section III.C of Appendix A to 10 CFR 100. The pressurizer heaters are not required to provide any of these critical safety functions. Operation of the pressurizer heaters is not required to mitigate any of the design basis events described in Chapter 15 of the Diablo Canyon FSAR. Although operation of the pressurizer heaters is required to maintain primary system pressure for power operation and hot standby, operation of the pressurizer heaters is not required to bring the plant to cold shutdown, which is a safe and stable condition. Tests at the Sequoyah Nuclear Power Plant have demonstrated that the effect of deenergizing the pressurizer

heaters would be gradual depressurization of the primary system (100 psig/hour) with no loss of natural circulation. These tests are described in a letter from L. Mills, TVA, to A. Schwencer, NRC, transmitting the Sequoyah Nuclear Plant Unit 1 special startup test report dated July 29, 1981, attached hereto.

Failure of the pressurizer heaters to operate would allow the reactor system to gradually depressurize which, in the absence of any corrective operator action, would eventually cause automatic actuation of the ECCS. The capability to provide emergency power to the pressurizer heaters is available at Diablo Canyon to reduce the number of demands for ECCS to operate in accordance with Item II.E.3.1 of NUREG-0737 and Item 2.1.1 of NUREG-0578.

INTERROGATORY 26

Does the Staff believe that the pressurizer heaters and related structures, instruments, systems and power sources should be seismically and environmentally qualified? Provide the basis for your response and a description of all documents relating to the qualification question.

RESPONSE

The pressurizer heaters are qualified to operate within the normal environment of the pressurizer. Neither the pressurizer heaters, related structures, instruments, systems and power sources are required to withstand earthquakes or environmental conditions resulting from postulated accidents

with the exception of the pressurizer vessel which houses the heaters and the backup emergency power sources as discussed in the response to Interrogatory 25 for the reasons described therein.

INTERROGATORY 27

The power operated relief valves and block valves at Diablo Canyon are not classified as safety grade. Does the Staff agree that these items (as well as related structures, controls, instruments and power sources) need not be classified as safety grade? What analyses, if any, have been conducted to support such classification as non-safety grade? Describe all such analyses and all other documents relating to the question of the classification of block and relief valves.

RESPONSE

Proper operation of the PORVs and the associated block valves is not a critical safety function and therefore the PORVs and block valves are not required to be designed to safety grade criteria. The pressurizer, PORVs and block valves are designed to safety grade criteria with respect to their function as part of the reactor system pressure boundary. Power to two of the three PORVs and block valves is supplied from safety grade power sources as discussed in Section II.G.1 of Supplement 10 to the NRC SER for Diablo Canyon.

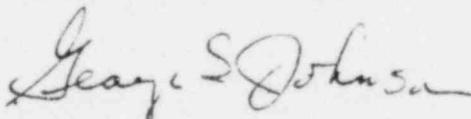
The critical safety functions which must be provided by safety grade systems are identified in Section III.C of Appendix A to 10 CFR 100. The

PORVs and block valves at Diablo Canyon are not required to provide any of these critical safety functions. The function of the PORV is to prevent unnecessary opening of the pressurizer safety valves and to provide a backup means of depressurization and overpressure protection. The function of the block valves is to permit isolation of a leaking or failed open PORV. Proper operation of the PORVs and block valves is not required to mitigate the consequences of any design basis accident. Analyses of design basis accidents are contained in Chapter 15 of the FSAR. Failure of a PORV and block valve to function can cause the equivalent of a small-break LOCA, but if the failure occurred in conjunction with a LOCA, the consequences would not be significantly altered. An unisolated stuck-open PORV would not result in core damage as demonstrated by analyses contained in Chapter 15 of the FSAR and in WCAP-9600.

Analyses of open PORVs in conjunction with a loss of coolant accident are also contained in WCAP-9600. These analyses demonstrate that opening the PORVs improved core cooling.

Emergency power has been provided to two of the three PORVs and to the three block valves to reduce the number of challenges to safety valves and ECCS during operation in accordance with Item II.G.1 of NUREG-0737 and Item 2.1.1 of NUREG-0578.

Respectfully submitted,



George E. Johnson  
Counsel for NRC Staff

Dated at Bethesda, Maryland  
this 2nd day of November, 1981

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of )  
PACIFIC GAS AND ELECTRIC COMPANY )  
(Diablo Canyon Nuclear Power Plant )  
Unit Nos. 1 and 2 )

Docket Nos. 50-275 O.L.  
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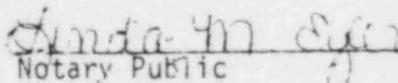
AFFIDAVIT OF JOHN R. SEARS

I, John R. Sears, being duly sworn, state as follows:

1. I am employed by the U.S. Nuclear Regulatory Commission as a Senior Reactor Safety Engineer, Emergency Preparedness, Office of Inspection and Enforcement.
2. I am duly authorized to participate in answering Interrogatories 1 through 24 and I hereby certify that the answers given are true to the best of my knowledge.

  
\_\_\_\_\_  
John R. Sears

Subscribed and sworn to before me  
this 22nd day of October, 1981.

  
\_\_\_\_\_  
Notary Public

My Commission expires: July 1, 1982

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

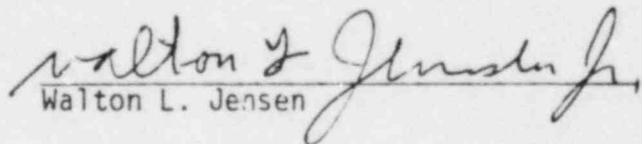
BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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

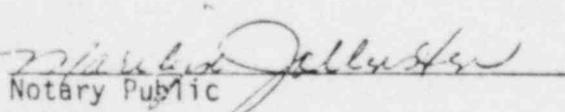
AFFIDAVIT OF WALTON L. JENSEN

I, Walton L. Jensen, being duly sworn, state as follows:

1. I am employed by the U.S. Nuclear Regulatory Commission as a Senior Nuclear Engineer, Reactor Systems Branch, Division of Systems Integration, Office of Nuclear Reactor Regulation.
2. I am duly authorized to participate in answering Interrogatories 25-27 and I hereby certify that the answers given are true to the best of my knowledge.

  
Walton L. Jensen

Subscribed and sworn to before me  
this 27<sup>th</sup> day of October, 1981.

  
Notary Public

My Commission expires: July 1, 1982



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
WASHINGTON, D. C. 20555

March 16, 1981

MEMORANDUM FOR: W. J. Dircks  
Executive Director for Operations

FROM: J. C. Mark, Chairman, ACRS

SUBJECT: EMERGENCY PLANNING AT NUCLEAR FACILITIES DURING  
AND FOLLOWING NATURAL EVENTS

In its review of nuclear power plants, particularly those in highly seismic areas, the ACRS has raised several questions regarding emergency planning and preparations, and the degree to which they take into account natural events such as earthquakes. For example, will systems and features used to alert the public to an accident in the plant, the equipment to monitor environmental conditions, the communications network, and emergency evacuation routes be available during or following a major earthquake.

The Committee recommends that the NRC Staff give further consideration to the development of emergency plans and the operability of equipment needed to deal with nuclear emergencies which result from natural disturbances.

In this connection, the Committee suggests that in the planning of exercises for the NRC Emergency Operations Center, consideration should be given to postulated scenarios including natural catastrophes such as earthquakes and related plant failures, particularly the failure of equipment or systems that are not Seismic Class I and the impact of such failures on systems important to safety.

It would seem advisable also that the FEMA be requested to review the capabilities of local emergency and disaster organizations to cope with multiple emergencies such as might result from a major earthquake followed closely by an accident at a nuclear power plant.

cc:  
Commissioners  
S. Chilk, SECY  
H. Denton, NRR  
V. Stello, I&E

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Anderson

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

400 Chestnut Street Tower II

July 29, 1980

Director of Nuclear Reactor Regulation  
Attention: Mr. A. Schwencer, Chief  
Light Water Reactors Branch No. 2  
Division of Licensing  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

Dear Mr. Schwencer:

In the Matter of the Application of ) Docket No. 50-327  
Tennessee Valley Authority )

Enclosed for your review are five (5) copies of the Sequoyah Nuclear Plant Unit 1 Special Startup Test Report dated July 28, 1980.

If you have any questions, please get in touch with D. L. Lambert at FTS 857-2581.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

*L. M. Mills* by *shd*

L. M. Mills, Manager  
Nuclear Regulation and Safety

Enclosure (5)

*F-10-1-15*

*Jayre*  
*800-731-0323*

3.3 Test #3, Natural Circulation with Loss of Pressurizer Heaters

3.3.1 Objectives

- (a) To verify the ability to maintain natural circulation and saturation margin with the loss of the pressurizer heaters while under natural circulation conditions.
- (b) To determine the RCS depressurization rate after natural circulation is established and the pressurizer heaters are tripped.
- (c) To verify the margin to saturation can be controlled through the use of primary charging flow and secondary steam flow.
- (d) To provide operator training in the natural circulation mode with the further degraded condition of the loss of all pressurizer heaters.

3.3.2 Results

With the reactor at approximately 3% power the reactor coolant pumps and all pressurizer heaters were tripped and the reactor coolant system allowed to come to equilibrium conditions. The reactor coolant system charging and letdown flow rates were adjusted to maintain a constant pressurizer level and the pressurizer was allowed to slowly cool. Over the testing period the cooldown rate averaged between 6 and 7°F/hr. (approximately 100 psig/hr.).

Once the depressurization rate had been determined, primary system charging was increased to verify the margin to saturation could be controlled by increasing pressurizer level (and therefore system pressure). The response to a 40 gpm increase in charging flow was immediately noticeable in system pressure and saturation margin. The pressure increase averaged around 12 to 14 psig per percent increase in pressurizer level.

A slight increase in steam flow slowed the pressure increase due to cooling of the primary system but the saturation margin continued to increase.