

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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BEFORE THE COMMISSION

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

RESPONSE OF PACIFIC GAS AND ELECTRIC COMPANY
TO COMMISSION ORDER CLI-84-4

The Commission, in its Order CLI 84-4 dated April 3, 1984, requested the parties to the Diablo Canyon licensing proceeding to provide their views on several issues regarding the potential consideration of the complicating effects of earthquakes on emergency planning. Pacific Gas and Electric Company's ("PGandE") responses are provided herein.

Issue 1:

Whether NRC emergency planning regulations can and should be read to require some review of the complicating effects of earthquakes on emergency planning for Diablo Canyon.

The NRC's regulations cannot and should not be read to require a specific review of the effects of earthquakes on emergency planning. In the Matter of Southern

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1 California Edison Company, et al. (San Onofre Nuclear
2 Generating Station, Units 2 and 3), CLI-81-33, 14 NRC 1091
3 (1981). In this regard, it is critical to differentiate:
4 (a) whether the emergency planning process should yield a
5 planning base with sufficient capability and flexibility to
6 accommodate complicating effects such as earthquakes or
7 (b) whether emergency plans should specifically address and
8 provide analyses of certain earthquakes as initiating or
9 ancillary conditions to an emergency. PGandE contends that
10 the former is both sufficient and preferable and is consis-
11 tent with the emergency planning basis adopted by the
12 Commission in its regulations.

13 The Commission, in its rulemaking process, artic-
14 ulated an emergency planning philosophy that would assure
15 both a broad and flexible preparedness in response to a wide
16 spectrum of possible events. In the joint NRC/FEMA planning
17 document "Criteria for Preparation and Evaluation of
18 Radiological Response Plans and Preparedness in Support of
19 Nuclear Power Plants," NUREG-0654/FEMA Rep 1 (NUREG-0654),
20 it was stated:

21 No single specific accident sequence
22 should be isolated as the one for which
23 to plan because each accident could have
24 different consequence, both in nature
25 and degree. Further, the range of
26 possible selection for a planning basis
is very large, starting with a zero
point of requiring no planning at all
because significant offsite radiological
accident consequences are unlikely to
occur, to planning for the worst

1 possible accident, regardless of its
2 extremely low likelihood. The NRC/EPA
3 Task Force [which prepared NUREG-0396
4 "Planning Basis for the Development of
5 State and Local Government Radiological
6 Emergency Response Plans in Support of
7 Light Water Nuclear Power Plants"] did
8 not attempt to define a single accident
9 sequence or even a limited number of
10 sequences. Rather, it identified the
11 bounds of the parameters for which
12 planning is recommended..." (Emphasis
13 added)

14 The TMI accident clearly demonstrated the unpre-
15 dictability of specific event sequences that might require
16 the implementation of emergency plans. Furthermore, as
17 prescribed in 10 C.F.R. Part 50, Appendix E, "The (emergen-
18 cy) plan shall be an expression of the overall concept of
19 operation...." The objective was to institutionalize a
20 response framework that will activate and respond on a
21 graded basis to any emergency; will allow for adjustment and
22 creativity in the specific required actions; and will, under
23 the most severe conditions, allow for the supplementation of
24 emergency response through expanded state and federal
25 assistance.

26 Interpreting the Commission's regulations to
require the explicit consideration of any specific event
scenario, such as an earthquake, would undermine, not
enhance the generic nature of planning. This is recognized
most clearly in the emergency classification scheme adopted
in NUREG-0654, where potential initiating events are grouped
into four classes. As clearly indicated in the examples in

1 NUREG-0654, natural phenomena, including earthquakes, are
2 contemplated as events which contribute to the emergency
3 planning character of each of these classes. Appropriately,
4 emergency plans are required to address these classes as
5 lumped parameters, to assure that response capabilities are
6 not distorted or preferentially aligned to any particular
7 sequence of events that might be included in any one class.

8 The specific actions which might be required in
9 response to a combination earthquake/radiological emergency
10 are not dissimilar from the response for either emergency
11 standing alone. Following an earthquake, for example, the
12 highways, bridges and overpasses are examined for
13 passability. Communications are checked and appropriate
14 channels are utilized. Technical assessments are conducted
15 to determine the extent of damage. Assistance is requested
16 from outside resources as necessary.¹

17 For a radiological emergency the same elements are
18 present. The roads are surveyed for possible evacuation,
19 communications are checked, technical assessments are
20 conducted for the radiological risk, and outside resources
21 are requested. Thus, the response for radiological acci-
22 dents and an earthquake are decidedly similar.

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25 ¹Federal Earthquake Response and Assistance Plan,
26 Federal Emergency Management Agency, Region IX, Draft May
(Footnote Continued)

1 PGandE contends that any additional consideration
2 of earthquake effects and emergency planning would most
3 logically fall within the Federal Emergency Management
4 Agency's (FEMA) jurisdiction at the Federal level and the
5 State of California's jurisdiction at the state and local
6 level. As noted, the primary impacts of an earthquake would
7 be those related to offsite issues such as transportation
8 routes and communications. These effects do not require any
9 specialized knowledge of radiological or nuclear matters.
10 The current radiological plans required by the NRC assure
11 that any necessary specialized knowledge for radiological
12 effects would be available. These earthquake impacts would
13 most directly challenge the planning and resources available
14 to state and local authorities as they currently exist for
15 non-radiological emergency preparedness. As such, the
16 federal role is properly reserved to FEMA and would be
17 implemented in conjunction with FEMA's general responsibil-
18 ities for civil disasters. Within California, for example,
19 this is illustrated by FEMA's active and continuing role in
20 earthquake response planning in concert with State and local
21 planning.²

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23
24 (Footnote Continued)
25 1983; State of California Earthquake Response Plan,
26 California Office of Emergency Services, April 1981.

² See references in footnote 1, supra.

1 The applicable federal law supports this conclu-
2 sion. The Earthquake Hazards Reduction Act of 1977
3 (PL 95-124 as amended by PL 96-472, 42 U.S.C. 7701 et seq.)
4 provides that FEMA "is designated as the agency with the
5 primary responsibility to plan and coordinate the National
6 Earthquake Hazards Reduction Program" (42 U.S.C. 7704).
7 Further, this Act provides that the Director of FEMA "shall
8 recommend appropriate roles for State and local units of
9 government..." in earthquake hazards reduction (Id.). The
10 Act does include as one of its objectives the reduction in
11 risk through earthquake resistant construction. Among the
12 areas listed for special attention are "nuclear power
13 generating plants" (Id.). The Act does mention the NRC as
14 an agency that also may have a role in this program (Id.).
15 It seems clear, therefore, that Congress intended FEMA to
16 have the lead role in working with State and local govern-
17 ments in various elements of earthquake hazard reduction,
18 whereas, the NRC's proper role is to assure that nuclear
19 plants are constructed and operated safely.

20 Notwithstanding the above arguments, PGandE has
21 conducted detailed studies of the potential effects of
22 earthquakes on emergency planning for the Diablo Canyon
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1 Power Plant.³ These studies were requested by the NRC staff
2 in December 1980, prior to the Commission's order in the San
3 Onofre proceeding (CLI-81-33). The results of these studies
4 provide further confirmation of PGandE's basic thesis that
5 the inherent basic flexibility and capability of the emer-
6 gency plans provide the necessary framework for responding
7 to all types of emergencies. A summary of the earthquake
8 emergency planning study conclusions and related matters for
9 Diablo Canyon is attached.

10 While the studies identified some areas where
11 emergency plans should be modified to more optimally and
12 specifically address earthquakes, this does not mean that
13 the existing planning base was not fully adequate as a
14 generic tool to provide effective response across the
15 spectrum of postulated events. Rather, it only reflected
16 that if one focused an emergency plan on a specific event or
17 class of events additional planning can be performed. A
18 similar conclusion would be expected if a detailed analysis
19 was performed for any specific emergency scenario.

20 In the case of Diablo Canyon Power Plant, the
21 principal additional planning that was performed was at the
22 local level where the County incorporated earthquake
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25
26 ³Earthquake Emergency Planning at Diablo Canyon, TERA
Corporation, September 1981. The Commission ordered that a
copy of this document be served on all the parties.
CLI-84-4 at p. 3.

1 response planning provisions into its existing Emergency
2 Response Plan.⁴

3 The emergency planning concepts developed for
4 Diablo Canyon Power Plant are not sensitive to the size of
5 an earthquake. This is not because of some regulatory
6 barrier to consider earthquakes larger than the SSE, but due
7 to the relative uncertainty and variability possible for
8 damage from any significant earthquake. This variability
9 requires the development of plans general enough such that
10 specific consideration of an earthquake larger than an SSE
11 is not needed. Also, at the high magnitude of the Diablo
12 Canyon SSE (Ms 7.5), the available evidence indicates that
13 local damage saturates such that little or no increase in
14 local damage would be expected for larger earthquakes.
15 Thus, the PGandE and local emergency plans are magnitude
16 independent and provide the capability and flexibility for
17 response to any size earthquake.

18 The risks from an earthquake at Diablo Canyon are
19 not unlike those posed by other natural phenomena throughout
20 the country, such as hurricanes in the Gulf coast, blizzards
21 in the Northeast and tornadoes in the Midwest. These and
22 other natural hazards will always have a potential for

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24 ⁴San Luis Obispo County/Cities Nuclear Power Plant
25 Emergency Response Plan, Section IV.2 (January 1984).
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1 affecting the offsite response at a nuclear power plant and,
2 we might add, have a far more frequent occurrence probab-
3 ility than an earthquake coincident with a radiological event.
4 Indeed, as the staff stated in its memorandum (p. 3) to the
5 Commission of January 13, 1984 (attached to Commission Order
6 CLI-84-4), the potential for a coincident earthquake and a
7 major plant accident at Diablo Canyon is an extremely low
8 probability event. Nonetheless, the measures discussed
9 above further assure that an adequate response to even these
10 unlikely conditions can be implemented.

11 Finally, earthquake emergency planning at Diablo
12 Canyon has received extensive peer review. The reports
13 commissioned by PGandE were reviewed and appropriate
14 recommendations incorporated by the County of San Luis
15 Obispo in the preparation of its emergency plans. The NRC
16 staff, the State of California and FEMA have also reviewed
17 the County plans which incorporated these earthquake
18 emergency planning aspects. Additionally, the State
19 Departments of Transportation and Mines and Geology⁵ have
20 reviewed the earthquake study that formed the basis for
21 those plans. None of these reviews have questioned the
22 adequacy of the earthquake emergency plans that have been in
23 effect since 1982.

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26 ⁵Unpublished reports.

1 Issue 2:

2 If the answer to question (1) is no,
3 should such a review be performed for
4 Diablo Canyon on the ground that it
5 presents special circumstances under 10
6 C.F.R. 2.758. If so, what are the
7 special circumstances that would permit
8 consideration of the effects of earth-
9 quakes on emergency planning for Diablo
10 Canyon?

11 PGandE submits that no special circumstances exist
12 that would warrant a finding under 10 C.F.R. 2.758 that the
13 effects of earthquakes on emergency planning should be
14 considered for Diablo Canyon. As noted above, severe
15 external phenomena can be postulated for any nuclear plant;
16 for Diablo Canyon Power Plant it may be an earthquake, for
17 another plant a severe flood or snowstorm.

18 As discussed above in the response to Issue 1,
19 emergency planning elements associated with any severe
20 phenomena are similar in nature. Planning for floods,
21 storms, or earthquakes requires coordination and evaluation
22 of communications and transportation and timely integration
23 of available resources to assure effective response. Since
24 these planning elements are generic and applicable to
25 essentially all severe phenomena, no special circumstances
26 exist for their consideration solely for earthquakes at
 Diablo Canyon Power Plant. To pursue the particularization
 of effects on emergency planning at one plant due to one
 event would necessarily require the same course of action
 for all other events. Special circumstances cannot be

1 found, and the issue must be judged on its merits as called
2 for under the Commission's first question.⁶

3 Respectfully submitted,

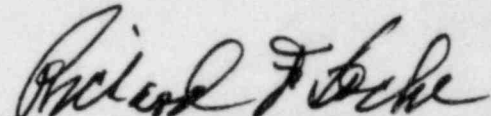
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24 By



25 Richard F. Locke

26 Dated: May 3, 1984

20 ⁶Special note should be taken of the isolated and
21 relatively remote location of Diablo Canyon to any
22 significant permanent population. For example, in the
23 six-mile zone surrounding Diablo Canyon, there are only
24 approximately 65 permanent residents. In the Matter of
25 Pacific Gas and Electric Company (Diablo Canyon Nuclear
26 Plant, Units 1 and 2), LBP-81-21, 14 NRC 107, 135, 136
(1981). Further, Diablo Canyon is located in an area of
California that has been characterized as one of low to
moderate seismicity. In the Matter of Pacific Gas and
Electric Company (Diablo Canyon Nuclear Power Plant, Units 1
and 2), ALAB-644, 13 NRC 903, 993-994 (1981).

ATTACHMENT

EMERGENCY PLANNING PROVISIONS FOR DIABLO CANYON

Earthquake emergency preparedness at Diablo Canyon and the County of San Luis Obispo has already been addressed as a result of the NRC Staff's letter of December 19, 1980. The planning for Diablo Canyon and the County is a multi-tiered effort with planning and response capabilities from Federal and State resources identified and coordinated with the County and PGandE.

The seminal work in this area was a study entitled "Earthquake Emergency Planning at Diablo Canyon" which was commissioned in 1981 by PGandE in response to a NRC staff request to address earthquakes and emergency planning. The principal conclusions of that study were:

1. Even on a pessimistic basis, a large earthquake in the study area would not be expected to result in total neutralization of emergency response capabilities. This is attributable to the inherent resistance of much of the physical equipment and structures involved and the diversity of capabilities provided by redundant and separate means of transport and communications.

2. Evacuation, as a protective action option, is available within a reasonable time for most geographic areas under estimated damage conditions. The availability of evacuation is enhanced considerably by pre-analyses of potential damage and repair resources, and the establishment of plans to survey, assess and repair damage and to utilize available evacuation routes in a maximum manner.

The emergency procedures of the California Department of Transportation (CalTrans), of the California Highway Patrol and the San Luis Obispo County Engineer's office are integrated in a way that response to an evacuation order can be accomplished in a very short time frame.

Procedures of CalTrans in the event of an earthquake in any given area call for immediate inspection of key overheads and bridges and coordinated redirection of traffic flows, if required.

Assessment of major damage that might close roadways can be quickly accomplished by aerial surveys directed from the ground. In the San Luis Obispo area, flights might be launched from the County Airport, the National Guard heliport, Santa Maria airport, Fresno or Bakersfield, or from airports outside the area. Such a survey can be accomplished within hours of the occurrence of an earthquake.

Repair resources have been identified in the earthquake study and by the County of San Luis Obispo and CalTrans. Additional personnel to perform repairs could be airlifted by helicopter or fixed wing aircraft. The availability of heavy construction units of the California National Guard at San Luis Obispo and the statewide resources of CalTrans would considerably diminish response and repair time.

3. Emergency planning must be considered as an evolving process and in the context of other related plans and events. The detailed assessment of earthquake effects and plans provided in the study are perhaps the leading edge of planning for these types of emergencies. Planning resources, and attention, should be distributed such that local, state and federal emergency planning is conducted in an integrated and harmonious manner.

Federal, State, County and PGandE plans already address earthquake planning aspects as summarized below:

Federal/State:

The Federal role is coordinated by FEMA, which has developed earthquake response plans that channel federal assistance and resources to the state and local level on an as-needed basis. The State of California has recognized the potential safety concerns associated with earthquakes and has acted to put into place an extensive plan for earthquake response. Assistance to local authorities would be drawn from throughout the state and allows for escalation to federal resources as well. The utility, county, state and federal plans would provide a coordinated, well-planned response to the situation.

The State of California has also addressed the effects of earthquakes on transportation. After the 1971 San Fernando earthquake, the California Department of Transportation (CalTrans) began a retrofit program to upgrade the seismic capability of state bridges, including those in the vicinity of Diablo Canyon Power Plant.

Public and County communication systems were evaluated for earthquake effects, including the emergency broadcast system (EBS). The public telephone system is expected to perform given its inherent seismic capability and experience in recent California earthquakes.

County:

The San Luis Obispo County/Cities Nuclear Power Plant Emergency Response plan (Section IV.2) already considers the complicating effects of an earthquake for a radiological emergency. The plan specifically addresses earthquakes in several ways:

1. An Earthquake Damage Assessment Center (EDAC) is established to respond to damage as a result of an earthquake. Emphasis will be on maintaining primary evacuation routes and communication systems. This group, composed of members of the County Emergency Organization and augmented by liaison personnel from public utilities (PGandE, Pacific Bell, Southern California Gas Co., etc.), will conduct operations from their office in the Emergency Operations Center (EOC).

The EDAC evaluates damage through surveys, or reports, from involved agencies. An assessment of damage is made with repair and restoration activities initiated on a priority basis. Activities are monitored with updates given to the County Direction and Control Group.

Communications are evaluated and appropriate repair or modification undertaken. Communication systems which are evaluated and repaired, if necessary, include PGandE, San Luis Obispo County, Pacific Bell and radio and television stations, especially the EBS stations.

The EDAC coordinates its activities with the Unified Dose Assessment Center (UDAC). The UDAC makes a technical assessment of the offsite radiological effects. It is a joint county, state, utility and federal operation. Together, the UDAC and EDAC make a recommendation to the direction and control group on which range of protection actions should be undertaken in each area.

2. The County Plan contains strategies for evacuation and sheltering based on damage assessment from earthquake effects. Offsite damage is categorized as none, light, moderate or heavy. Corresponding evacuation times have been determined and include repair time requirements.

Diablo Canyon - Onsite

PGandE has available specialized procedures and equipment onsite to assist in responding to earthquakes. A Diablo Canyon Power Plant Emergency Plan Procedure goes into considerable detail on plant personnel response. There are detailed actions to be implemented for specific ranges of indicated ground acceleration.

For specified earthquakes, the instructions include a checklist to be performed by inspection crews to evaluate safety systems throughout the plant. Drawings specify which areas are to be inspected. Forms are then filled out to be returned to plant engineers for evaluation.

The plant itself is equipped with two seismic measuring systems. One of the systems is designed to automatically trip the unit if the ground acceleration exceeds a preset level. The plant operators in the control room are also instructed to shut the reactor down if certain ground acceleration levels are exceeded or if a plant survey indicates any significant damage.

Communications equipment onsite were evaluated. Given the redundancy and diversity of communication channels (private telephone/microwave, public telephone, and radio telephone) and their seismic capabilities, it was concluded that sufficient capability would exist after a large earthquake.

Modes of evacuation of non-essential plant personnel and resupply of personnel and equipment were also reviewed. Alternatives exist such that onsite evacuation and resupply could be accomplished.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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

Docket No. 50-275
Docket No. 50-323

CERTIFICATE OF SERVICE

The foregoing document(s) of Pacific Gas and Electric Company has (have) been served today on the following by deposit in the United States mail, properly stamped and addressed:

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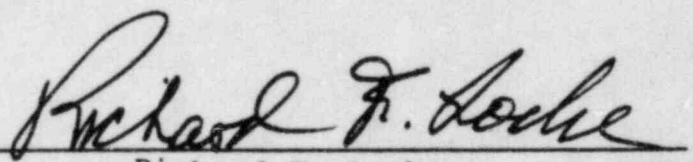
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Date: May 3, 1984

*Via Sky Courier Network


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