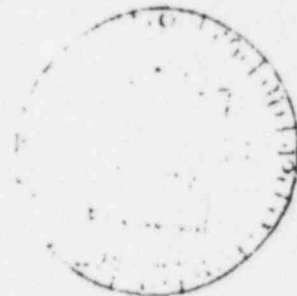




UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

MAR 4 1975



DOCKET NO. 50-275 and 50-323

FACILITY: Diablo Canyon Nuclear Power Plant (Diablo Canyon)

APPLICANT: Pacific Gas & Electric Company

SUMMARY OF MEETING HELD ON FEBRUARY 5, 1976 TO DISCUSS GEOLOGY AND SEISMOLOGY OF DIABLO CANYON SITE.

On February 5, 1976 we met in Menlo Park, California with Pacific Gas and Electric Company (PG&E) and the U. S. Geological Survey (USGS) to discuss geology and seismology of the Diablo Canyon site. A list of attendees is enclosed.

The purpose of the meeting was to discuss the differences of opinion which had arisen regarding geology and seismology at this site, to hear PG&E's views regarding such differences and to give PG&E our views and those of the USGS. A proposed agenda, which was used to guide the discussion, is enclosed.

With regard to the northern end of the Hosgri fault and its possible connection with the San Simeon fault, D. Hamilton presented PG&E's views on the investigations conducted in that area. He stated that he places greatest weight on the physical work in the area of the possible connection, which do not demonstrate a connection. He also cited the style of movement on the Hosgri fault. C. Hall of the University of California at Los Angeles (UCLA) presented a summary of his work on matching stratigraphic sequences, which suggest about 80 kilometers of strike slip movement on the Hosgri fault in the last 5-13 million years. H. Wagner of USGS stated that, while the physical data do not indicate a connection with the San Simeon fault, they neither disprove such a connection because of limitations on how close to shore the survey ships had been able to go. H. Colter of USGS stated that, while USGS would be willing to review further information which may be submitted, it did not seem the positive proof one way or the other was necessary to the situation at hand. He read the draft USGS conclusion to demonstrate this point. A copy of the draft USGS conclusion is enclosed.

With regard to the location of the 1927 earthquake, S. Smith presented the applicant's views. He stated that the teleseismic location data were poor and should not be used to indicate that the 1927 earthquake was or might have been located on the Hosgri fault. He discussed other evidence indicating that it was not on the Hosgri fault. We questioned Smith on whether the felt effects of the 1927 earthquake (isoseismal lines),

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taken by themselves, indicate that the earthquake was further away from the coast than the Hosgri fault. Smith stated his opinion that, while the felt area was small for such a large earthquake so close to the coast, it was within the range of variability for earthquakes. He, therefore, could not agree that the size of the felt area could be used to positively preclude the possibility of the 1927 earthquake having been located on the Hosgri fault. Smith did however, state his opinion that his work using s-p intervals to locate the earthquake and its aftershocks clearly indicate that the 1927 earthquake was not on the Hosgri fault, especially when taken with other evidence such as ship reports, type of motion and fish kills. H. Colter stated USGS opinion that the teleseismic location data is the keystone to assessing the location of the 1927 earthquake.

Regarding the southern termination of the Hosgri fault, D. Hamilton, H. Wagner, D. Willingham and J. C. Stepp and R. Hofman examined and discussed seismic profile, and fault maps to obtain a better understanding of the specific points where PG&E's interpretations of the data differ from the USGS interpretations. (The USGS opinion is that the Hosgri fault continues further southward than PG&E's interpretations indicate).

*D. P. Allison*

Dennis P. Allison  
Light Water Reactors  
Branch No. 3  
Division of Project Management

Enclosures:

1. List of attendees
2. Proposed agenda
3. USGS draft conclusions

cc: Service list

Attendance List  
Meeting Held With Pacific Gas & Electric Company  
Diablo Canyon Nuclear Power Plant  
February 5, 1976

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USGS

F. A. McKeown  
H. W. Coulter  
F. N. Houser  
J. F. Devine  
H. C. Wagner  
C. A. Hall  
W. B. Joyner  
M. Hill  
D. McCulloch

PG&E

W. J. Lindblad  
R. V. Bettinger  
V. J. Ghio  
P. A. Crane  
F. F. Mautz  
G. O. Gates

PG&E CONSULTANTS

Stewart Smith  
Richard Jahns  
Douglas Hamilton  
C. Richard Willingham  
Michael Keaton  
Harvey Wagner  
Richard Meehan  
John Blume  
J. C. Morrissey

REPORTERS

D. Kutzman  
J. Staley  
D. Perlman

NRC - STAFF

D. P. Allison  
J. C. Stepp  
H. R. Denton  
R. B. Hoffman  
L. D. Davis  
T. Young  
J. Hanchett

PROPOSED AGENDA  
USGS - APPLICANT MEETING  
DIABLO CANYON

1. Detailed discussion of each profile intersecting or possibly intersecting the Hosgri fault near its Southern termination as mapped by Hoskins and Griffith 1970 or USGS other than in published or open file maps.
2. Discussion of all documentable phenomenon regarding the northern end of the fault and possible connection with the San Simeon e.g. borings and the stratigraphic relationship recently proposed by Hall.
3. The epicenter and error associated with an unweighted solution of all seismic data for the 1927 Pt. Arguello earthquake.
4. The accuracies of P times given in the ISS, ISC or BCIS for data used in the 1927 re-solution.
5. The effect of gaps in azimuthal coverage and the critical dependence on data at about  $340^{\circ}$ , pointed out by Engdahl, on the shape of the 95% confidence areas over the proposed epicenters.
6. Reconcilliation of Intensity contours and proposed locations of the M=7.25 1927 Pt. Arguello earthquake.
7. Reconcilliation of the maximum Intensity observed with the proposed epicenters of the M=7.25, 1927 Pt. Arguello earthquake.
8. Discussion of attenuation and method of specification of design accelerations or other parameters.

PGE  
Double Canyon site  
Unit 172

1/12/75

Geology & Seismology

#### Conclusions

Although the FSAR includes a considerable amount of new information and analysis, the only change that can be made in the original conclusions transmitted to the NRC on January 28, 1975, is to be more specific in our estimate of the design basis earthquake. This is based upon the following facts and judgments.

1. The Hosgri fault zone is more than 90 miles long and may even tectonically coupled to the San Simeon fault as they are within 2.5 miles of each other and both form parts of the eastern boundary of the Santa Maria basin.

2. Marked changes in thickness and signature of acoustical units across the Hosgri fault zone in several profiles indicates evidence of lateral slip. This was noted in our review of January 28, 1975, but such changes are even more abundant in the profiles of Amendment 31. Right lateral movement is reported for the San Simcon fault. These data suggest that displacements on the Hosgri fault are related to the highly active San Andreas plate-boundary system.

3. The length of the Lompoc fault appears incompatible with the magnitude of the 1927 earthquake.

4. The Hosgri fault is closer to the center of the estimates of error of both Engdahl and Cawthrop than any other fault. It is therefore a possible source of the 1927 earthquake.

5. Equivocal evidence related to vertical displacement on the Hosgri fault in the epicentral area of the 1927 earthquake does not eliminate it as a source. Surface rupture is generally discontinuous, and if lateral slip occurred, it probably would not be detected. Offset of the base of post-Wisconsinan sediments and probable faulting of them is evidence of post-Pleistocene movement.

For the above reasons and discussions given in the review, we conclude that the 1927 earthquake could have occurred on the Hosgri fault and that a similar earthquake with a magnitude in the range of 7.0 - 7.5 could occur in the future anywhere along the Hosgri fault.

6. We repeat our opinion that, for sites within 10 km of the surface expression of a fault, the description of maximum earthquake ground motion by means of a single acceleration value may not be an appropriate representation.

Consequently, we feel that it is appropriate that the Safe Shutdown earthquake for this site be described in terms of near-fault horizontal ground motion. A technique for such a description is presented in the Geological Survey Circular 672 entitled "Ground Motion Values for Use in the Seismic Design of the Trans-Alaska Pipeline System" (Ref. 4). It is our intention that the ground motion values as shown in Table 2 "Near-fault horizontal ground motion" of Ref. (4) for magnitude 7.0 and 7.5 be used to form the basis of a description of the earthquake postulated to have the potential for occurring on the Hosgri fault at a point nearest to the Diablo Canyon site subject to the conditions placed on these values in Ref. 4.

It is intended, also, that this potential earthquake be considered in addition to all earthquakes considered previously by the applicant during the construction permit review process.