

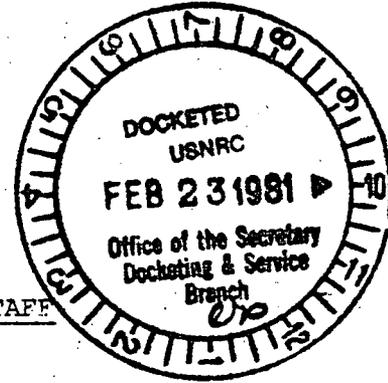
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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the matter of)
SOUTHERN CALIFORNIA EDISON COMPANY, ET AL.)
San Onofre Nuclear Generating Stations,)
Units 2 and 3)

Docket Nos. 50-361-OL
50-362-OL



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US NRC
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INTERVENOR, FOE ET AL
INTERROGATORIES TO NUCLEAR REGULATORY COMMISSION STAFF

Intervenors Friends of the Earth, et al, requests that the NRC Staff answer under oath, pursuant to 10 C.F.R. 2.740B, the following interrogatories within 14 days of service thereof. In answering these interrogatories, you are required to furnish all information that is available to you, your investigators and your consultants, regarding the responses.

1. Describe any research investigations that you have requested of the Applicants since you received the first USGS report, dated August 13, 1980, which documented the newly discovered geologic structure named the "Cristianitos Zone of Deformation" (CZD)

2. Since August 13, 1980, what facts, information and data have you considered in your analysis of the important question, "Would movement on the OZD be reasonably expected to be accompanied by movement on the CZD"?

3. Since August 13, 1980, what research investigations have you requested the Applicant to perform regarding the question quoted "Would movement on the OZD be reasonably expected to be accompanied by movement on the CZD"?

4. Since August 13, 1980, have you asked the Applicant to conduct geologic research onshore between Pt. San Mateo (where the CZD projects onto the shoreline according to California State Geologist Jim Davis' letter to you of August 11, 1980) and the SONGS 2 and 3 reactors, including the San Mateo and San Onofre

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creekbeds to search for the CZD on land near the SONGS site: If you have not made such a request, justify your lack of effort. If the request has been made, what were the results?

5. Do you agree that the projected strike of the CZD nearest to the SONGS reactors as mapped by Greene and Kennedy (9-80) reveals that the CZD could extend directly beneath the SONGS reactors?

6. Have you ever asked the Applicant to do any trenching, drilling, vibroseis, seismic refraction work or any other subsurface geophysical research (A) in the area where the CZD projects onto the shoreline and into the alluvial valleys of the two creeks, or (B) along the Cristianitos Fault (restricted use) to determine more precisely the age of most recent movement in locations other than the seacliff exposure?

7. Have you ever requested the applicant to conduct any research along the Cristianitos Fault Zone using tiltmeters, strainmeters, magnetometers, or microseismic surveys directly on the Cristianitos Fault Zone (not including the Capistrano Embayment)?

8. Have you requested the Applicant or your staff or consultants to review new information and data from the recent (ongoing?) wildcat oil well drilling being conducted by a major oil company along the Cristianitos Fault inland from the SONGS? If you have not, why not?

9. Have you requested the USGS or any of your consultants or the Applicant to conduct more research in the shallow waters between the SONGS reactors and the portion of the CZD which is mapped closest to SONGS in the "Geologic Structure Map-San Onofre Offshore" of September 1980? If your answer is no, justify this lack of research for important data.

10. Have you requested the Applicants to have their consultants conduct more offshore seismic profiling or more research to clarify any unresolved questions or data voids which might exist in the offshore profiles which provide the data base for analyzing the structural relationships between the OZD and the CZD and between the CZD and the Cristianitos Fault (restricted use) and the SONGS reactors? If you have not requested this, in light of the differences of opinions regarding interpretations of these structural relationships, justify your lack of requiring the Applicant to do more research and to provide more data to answer these questions regarding the structural relationships involved, which are crucial in answering the question "Could movement on the OZD be reasonably expected to be accompanied by movement on the CZD, and cause ground motions at the SONGS site?"

11. Do you agree that the techniques used by Nekton for the July 1980 report from the Applicants were shallow, near surface profiling techniques which did not reveal the structure of the CZD or the Cristianitos Fault offshore below a shallow depth?

12. Compare the quality and quantity of research and data that are available in the SONGS Geoscience review for the Newport-Inglewood Fault Zone, the segment of the OZD offshore from SONGS, the Cristianitos Fault, and the Cristianitos Zone of Deformation? Do you agree that it would be helpful if the quality and quantity of data on the CZD and OZD were closer to that available on the Newport-Inglewood Fault Zone?

13. The September 1980 map by Greene and Kennedy entitled "Geologic Structure Map, San Onofre Offshore" identifies several data voids that need to be clarified before any conclusions can be reached regarding the question "Would movement on the OZD be accompanied by movement on the CZD?" Do you intend to ask the Applicants or the USGS and CDMG marine geologists to do the offshore seismic profiling necessary to fill in those data voids? If you do not intend to ask for more research, justify in detail the facts, documents, and witnesses that you intend to present at the hearings to justify your lack of adequate research efforts.

14. Considering the fact that a Magnitude 6.3 earthquake in 1933 on the Newport-Inglewood Fault Zone (OZD) left no surface displacements that are visible anywhere today, just 47 years later, why would you expect a Magnitude 6.3 earthquake on the Cristianitos Zone of Deformation or the Cristianitos Fault (restricted use) within the past 35,000 years to leave any surface displacements visible today?

15. At what angle and orientation does the branch of the Cristianitos in the seacliff exposure project into the offshore area?

16. Define the following terms, as used in this proceeding:

- (a) wave-cut platform
- (b) maximum probable earthquake
- (c) maximum possible earthquake
- (d) maximum credible earthquake
- (e) limiting maximum design earthquake

17. Would you agree that the water saturated near surface sediments offshore from SONGS would tend to "heal" or cover up surface displacements that occur on the CZD during Holocene times?

18. Have you ever asked the Applicants to do research on the Cristianitos Fault Zone which compares with the techniques used by the oil companies when they search for gas and oil onshore? If not, why not?

19. Compare the amount of trenching done on the Cristianitos Fault Zone done by the SONGS Applicants to the amount of trenching that has been done along the Verona Fault by the Applicants at the Vallecitos Nuclear Center in Northern California since a new fault was discovered near the reactor there by the USGS in September 1977?

20. Compare the amount of offshore research done by the Applicants for the Diablo Canyon reactors with the amount of offshore research done by the Applicants at SONGS. Include a comparison of amounts of money spent on geologic and seismic research by the two Applicants?

21. Why has the Staff not requested or required the SONGS Applicants to do as much offshore research as was done for Diablo Canyon?

22. In the Staff SER, the Staff adopts the Applicant's position that the OZD is "about 5 miles" from the SONGS 2 & 3. Apparently this number is based on the Applicant's positions throughout it's documents that the OZD is located 8 km offshore from SONGS. However in the August, 1980, report by Greene and Kennedy, which is included as an appendix to the Staff SER, the USGS and the CDMG Marine Geologists state that the OZD "is located on the distal part of the nearshore shelf approximately 7 km from SONGS at it's closest point." Apparently the Applicant's position of "about 5 miles" is based on the Applicants position that the OZD is 8 km. offshore, since 8 km. is 4.8 miles. But 7 km is 4.2 miles, or "about 4 miles", not "about 5 miles".

Why does the Staff choose to agree with the Applicant's position rather than that of the USGS and CDMG Marine Geologists?

23. Will the Staff ask the Applicant to recalculate ground motions and response spectra based on a distance of 7 km between the OZD and SONGS, in each document where a distance of 8 km was used previously by the Applicants? If the answer is no, then explain precisely why not and justify the Staff's disagreement with the USGS report, entitled "Review of Offshore Seismic Reflection profiles in the vicinity of the Cristianitos Faults, San Onofre, CA"

24. Prior to the 1980 offshore seismic profile reports by Nekton and by Greene and Kennedy, had the Staff ever asked the applicant to specifically generate offshore seismic profile data to investigate whether or not there were any faults offshore from SONGS which either might form a structural relationship with the Cristianitos Fault or might project directly beneath the SONGS reactors? If not, justify and explain why not. If yes, specify and describe the research and results and documents where it is discussed.

25. Is the "wave-cut terrace which is estimated to be 70,000 to 130,000 years old" (in section 2.5..1.3 of the SER) the same terrace that overlies the Cristianitos Fault at it's seacliff exposure?

26. On page 2.5.4 of the SER, in section 2.5.1.5, the Staff notes that "If other unobserved branches of the fault exist, they could exhibit evidence of movement on the fault which is more recent than that exhibited in the mapped fault at the sea cliff.

27. How do you justify the Staff assumption that it is adequate methodology to assume that only 22 % or 30 % of the OZD fault would rupture during a quake? Other scientists have said one half to all of the length of faults have ruptured during historic quakes.

28. If the slip rate of the Rose Canyon (1-2mm/yr.) or the Agua Blanca (2.7mm/yr) are plugged into the charts developed by the Applicant's Consultants, what would be the HEL, DEL and MEL for those faults?

29. Was the data on the slip-rate on the Antioch Fault changed by the displacements observed during the January 24, 1980 Livermore earthquake which was reported to involve the Antioch Fault?

30. Does the paucity of data for faults with slip rates below 1 mm/yr indicate uncertainty in the reliability of the Applicant's conclusions about MEL's and DEL's for the Newport-Inglewood-OZD?

31. What evidence do you have to disprove the hypothesis that the slip rate is lower on the Newport-Inglewood segment of the OZD than it is on the OZD segments to the south, and lower than the slip rate on other (parallel) strike-slip faults in Southern California because the Newport-Inglewood Fault is uniquely truncated on the North by the Transverse Santa Monica Fault and because this truncation relationship blocks or inhibits the slip-rate on the Newport-Inglewood Fault Zone ?

32. How do you justify the Staff's acceptance of the Applicant's consultant's assumption that they can manipulate the data base in their study by eliminating strike-slip faults with significant dip-slip components from the data base used to study the OZD, when Rose Canyon segment of the OZD has a significant dip-slip component?
33. How would the data base and conclusions or assumptions about HEL, MEL and DEL for the OZD be affected if the chart were to include faults with dip-slip ?
34. What would be the (Maximum credible) magnitude for the OZD using Dr. Slemmons method if the rupture length used were 110 km. long as described in the USGS 115-81 report for the Newport-Inglewood fault?
35. If Dr. Slemmons were asked to consider larger slip rates and longer rupture lengths, for the OZD, would the result be larger magnitude estimates?
36. What role do the parameters of dynamic and static stress drops play in the Delta model used by applicant's consultants to study accelerations?
37. How are the response spectra and the peak horizontal and vertical ground accelerations (instrumental free field) affected if the stress drop parameters are increased in size in the Delta modeling for SONGS?
38. On p.2.5-3 of the SER, the Staff seems to agree with the Applicant's interpretation that there were no Holocene movements on the Cristianitos Fault documented because "The lime-filled crack does not coincide with the Cristianitos Fault, but is located 10 to 12 feet west of the Cristianitos Fault. Why would ten or 12 feet distance mean that the observed displacement could not be within the Cristianitos Fault Zone since the Cristianitos Fault Zone is much wider than 10 or 12 feet?
39. The Applicants go on to say that "the crack is most likely due to consolidation creep or to downslope movements. What does "most likely" mean here? Are you basing your conclusions on probability and uncertainty?
40. What evidence do you have to disprove the hypothesis that off-shore movements on the CZD have gradually migrated north and west of the older "Cristianitos Fault (restricted use) as mapped in the seacliff ?

41. What evidence do you have that there are no younger offsets in the San Onofre Creek bed and the San Mateo creekbeds and in general to the west and north of the old Cristianitos Fault?

42. The Applicants arrived at a slip rate of 0.0015 cm/yr for the CZD by assuming that the fault had been slipping for 12 million years. Yet the other consultant to the applicants says that the fault originated from 10 to 4 million years ago. Explain this discrepancy.

43. Would the slip rate on the Cristianitos be larger if the length of the period of time of displacement is smaller?

44. Why does the staff accept the applicants use of vertical displacement of only 600 feet on the Cristianitos Fault for calculating the slip rate when there are larger vertical displacements on the Cristianitos Fault?

45. What would the slip rate be using the largest vertical displacements and the smallest length of the period of time of displacements?

46. Has the Staff ever requested the Applicants to conduct a micro-earthquake study directly on the Cristianitos Fault? How far from the Cristianitos was the 1975 microseismic survey in the Capistrano Embayment?

46. Does the Staff plan to ask the Applicant to have their consultants model a specific earthquake that has not been modeled in the past which is an earthquake whose epicenter is located on the OZD South of the the structural relationship between the OZD and CZD, and an earthquake with rupture propagating northward along the OZD and into the structural relationship fault geometry that was newly mapped for the first time in 1980 by Greene and Kennedy in their "Geologic Structure Map--San Onofre, Offshore." Explain response.

47. What ground accelerations (horizontal and vertical, peak and effective) does the Staff predict at the SONGS 2 and 3 site from the effects of seismic focusing that would result from the earthquake described in number 46.

48. Why is the Staff so resistant to assigning a SSE for SONGS 2 and 3 which is higher than Magnitude 7.0? Is it because the reactors were not designed for and are not capable of surviving an earthquake higher than Magnitude 7.0?

49. What would be the effect on the SONGS 2 and 3 structures, systems, and components important to safety if an earthquake larger than Magnitude 7.0 occurred on the Newport-Inglewood OZD, with characteristics described in Number 46?

50. Are the SONGS 2 and 3 design criteria of .67 g horizontal ground acceleration and .44 g vertical accelerations based on the assumption that verticals would never exceed the horizontal accelerations? Explain your answer.

51. What would happen to SONGS 2 and 3 structures, systems, and components important to safety (especially cooling water piping systems) if the future earthquake of Magnitude 7.0 has vertical acceleration that exceed the horizontals in a manner similar to what occurred in the Imperial Valley 1979?

52. What would happen to SONGS 2 and 3 structures, systems, and components important to safety (especially cooling water piping systems) if a future earthquake of Magnitude 6.5 or 7.0 has characteristics described in number 46 and causes vertical ground accelerations at the SONGS 2 and 3 site which exceed 1.0 g, a situation that has been observed in many earthquakes of that size ?

53. How can you guarantee the public health and safety which would be threatened if the earthquakes described in numbers 49, 51, and 52 above were to damage the cooling water pipes in SONGS 2 and 3 and cause a LOCA and a meltdown?

54. Are the Staff or Applicant using the concept of "effective" accelerations in analyzing the seismic design of SONGS 2 and 3? Are there any plans to use "effective" accelerations at SONGS as was done at Diablo Canyon? Explain how this concept is being used and to what extent in relationship to peak ground accelerations (instrumental free field).

55. How will the safety-related structures, systems and components important to safety at SONGS 2 and 3 be affected if the accelerations in a future earthquake exceed the .67 g Horizontal (with peaks above .75 g) and the .44 Vertical design criteria?

56. Has the Staff asked the Applicant to analyze the data from IV 79 in relation to SONGS 2 and 3 for distances from the fault of less than 8 km? If so, explain in detail the results of such an analysis. If not, when does the Staff plan to make the request or justify why the Staff does not intend to make that request of the Applicant?

57. Justify the assignment of a .44 g vertical acceleration design criteria for SONGS 2 and 3 in terms of applicability of the assumption that verticals would be either 2/3 or no larger than the horizontal accelerations, in light of data from the numerous recent earthquakes where verticals exceed horizontals.

58. Justify the Staff's acceptance of the .44 g vertical acceleration design criteria for SONGS 2 and 3 in terms of the reliability of that basing that number on a methodology that may not be applicable in the near field (less than 10 kilometers).

59. Explain why several nuclear reactors in the Eastern U.S.A. were shutdown in 1979 because of inadequate seismic design. How are those concerns raised by the Staff applicable to the SONGS 2 and 3 Proceedings?

60. Do you agree that at some time in geologic history, the OZD was the plate tectonic boundary fault in Southern California and Baja? If not, explain how you disagree.

61. Do you agree that the reports and map prepared by Greene and Kennedy in 1980 for the USGS and the NRC indicate that there is a structural relationship between the OZD and the CZD? If you disagree, explain.

62. Describe in detail your current interpretation of the structural relationship between the CZD and the OZD.

63. Describe in detail your current interpretation of the structural relationship between the CZD and the Cristianitos Fault.

64. Do you agree that there is a hiatus or gap in the available data on the dating of sedimentary layers along the Cristianitos Fault and the Cristianitos Zone of Deformation? Explain your response in detail.

65. Do you have any evidence to disprove the hypothesis put forward by your consultant from the USGS Joe Andrews that the true boundary line for MEL in the Figure 7 of the Woodward Clyde report should be Vertical, i.e. that any of the faults in that list could have a Magnitude 8 earthquake?

66. Do you contend that the Cristianitos Zone of Deformation has not moved once in 35,000 years or more than once in 500,000 years?

(a) State each and every fact and identify each and every communication upon which you base this contention,

(b) Identify each and every person with knowledge of the factual basis or bases for this contention, or on whose writings, opinions, or testimony you base this contention; and

(c) Identify each and every person, expert or otherwise, whom you expect to call as a witness at the hearing before the ASLB in support of this contention, and as to each potential witness so identified provide

the following information:

(1) State the substance of the facts and opinions to which you expect the witness to testify;

(2) Summarize the factual and theoretical basis, as well as any other grounds, for each opinion to which the witness is expected to testify.

67 Do you contend that the Cristianitos Fault Zone has not at any point along its entire length had movement at or near the ground surface at least once in the past 35,000 or more than once in the past 500,000 years?

Answer subquestions 66 a,b,c and c (1 and 2) as applied to Interrogatory number 67, and as they are written in Interrogatory 66. List these responses as 67a, 67b, 67c, 67c.i and 67c .ii.

68 Justify the NRC Staff's lack of requirements to the Applicants to conduct an analysis of the A,B,C,D features at the site which relates them to potential rupture due to seismic shaking especially in light of the new offshore mapping of the CZD which appears to be structurally related to feature A beneath SONGS 2.

69 Have you or your consultants ever conducted or requested the Applicant to conduct (since the discovery of the CZD by Greene and Kennedy) an analysis of the ground motions that would result at the SONGS 2 and 3 site from directivity or seismic focusing (as described by Dr. James N. Brune in Testimony on Ground Motions at the Diablo Canyon hearings) that could cause sympathetic ground motions and higher ground accelerations on the Cristianitos Zone of Deformation, during an earthquake South of SONGS on the OZD? If your answer is negative, then provide a full and complete justification for this lack of adequate investigation into an issue that is critical in deciding the proper seismic design criteria in light of the new fault geometry, as mapped by Greene and Kennedy in September 1980. The geologic evidence that suggests the possibility described here is the new mapping, and dating of the sediments offshore, so please do not respond the way you did to Intervenor's Interrogatory 7 in the Set answered in October 1980, in that weak and inadequate explanation for lack of crucial research.

- 70 What evidence do you have to disprove that the hypothesis that San Onofre Mountain is a product of wrench tectonics?
- 71 Why have you not requested the Applicant to predict ground motions at the site from thrust faulting on the OZD?
- 72 Why have you not rigorously pursued your requests of the past to the Applicant to predict ground motions and response spectra for Earthquakes on the OZD with Magnitudes between 7.0 and 8.3?
- 73 Why have you not conducted an analysis of the San Fernando earthquake characteristics as they apply to the SONGS site?
- 74 Do you agree that a structural relationship between the Agua Blanca Fault Zone and the Transform Plate Boundary Zone in the Gulf of California would be significant in determining the maximum magnitude earthquake that could occur on the OZD?
- 75 Is San Onofre Mountain a result of dip-slip motion on the Cristianitos Fault? Justify and explain your response.
- 76 Do you agree that in the Operating License proceedings for SONGS 2 and 3, that according to 10 CFR 100 Appendix A, that the NRC must consider the fact that a single event, i.e. a single earthquake on the OZD or CZD, or the controlling geologic structure, could cause both of these reactors and the third older unit one at the same site, to have structural damages to the systems, structures and components that are essential to protect public safety? Justify and explain your response.
- 77 Do you agree that the same earthquake described in 76 above could also damage the spent fuel pools at each of the three reactors thus potentially releasing radiation from all three reactors and all three spent fuel pools? Justify and explain your response.
- 78 Do you agree that there is a high pressure gas line near the SONGS site which could cause an explosion that could result in emergency conditions at SONGS? Explain.
- 79 Describe your understanding of the Applicant's response to your question 361.49, where you inquire in regards to an unpublished statistical analysis by a SCE consultant that computed the number of quakes to the right of the DEL in Figure 7 assuming that all of the faults in figure 7 and all California faults could experience a maximum magnitude 8.5. Does this mean the OZD could have a M. 8.5? If not, explain your response.

80 Justify the Staff's lack of request to the Applicant to conduct more research core drilling in the offshore regions, and at greater depths than 40 feet, to provide a data base for analyzing the questions about the age of most recent movement on the CZD.

81 Do you believe that the Applicant has appropriate age-data on the oldest strata capping the CZD and the youngest data cut by the CZD? Explain your understandings of these variables in the data base. Explain your interpretations of the data base.

82 If the Woodward Clyde report to the California Coastal Commission for the LNG site 5 miles south of SONGS could collect seismic profile data within a few meters of the shoreline, how can the NRC Staff justify not requesting its consultants, the USGS or the Applicants to conduct research to examine the structural geometry just offshore from SONGS in the shallow water labeled data void on the Greene and Kennedy map?

83 Do you agree that focal mechanism studies for smaller magnitude quakes are ambiguous, uncertain, and subject to manipulated interpretations? If you disagree, explain and justify your response.

84. After the earthquake fault features A,B,C,D were discovered in the Unit 2 excavation in 1974, did the NRC Staff ever discuss with the Applicant a possible recommendation to move the reactor site a little bit so that Unit 2 would not be exactly on top of conjugate faulting? If the Staff did not recommend that, justify the lack of concern.

85. Justify why the NRC Staff has never required the Applicant to do seismic profiling research on the seaward side of the OZD-CZD structural geometry to see whether or not the CZD continues on the other side of the OZD?

86. Discuss in detail all of the kinds of research methodologies that are technologicly available to conduct research offshore along the CZD to determine what the age of most recent movement was. Why has the Staff not required the Applicant to do this research? What do you

87. What do you contend to be the age of most recent movement on the Cristianitos Zone of Deformation? Answer the Interrogatories 66a, 66b, 66c, 66c.i, and 66c.ii as if they were written 87a,87b,87c,87c.i,87c.ii.

88. For the three faults with the lowest slip rates in the Applicants Figure 7 of the Woodward Clyde report (1979, 1980), what is the total probability that an exception would have been observed in historic seismicity records?

- 89 Do you have any evidence to disprove the hypothesis that the A,B,C,D features at the site represent deeper structures? Explain response in detail.
- 90 Have you required the Applicant to conduct an analysis of the stress field orientation regarding the A,B,C,D features? If not, why not?
91. Explain any evidence that you know to dispute the hypothesis that the A,B,C,D features are a product of wrench tectonics.
92. What evidence do you have to disprove the hypothesis that the Cristianitos Fault is a product of wrench tectonics and forms a structural relationship between two parallel wrench faults, the OZD and the Whittier Elsinore Fault Zone?
93. What evidence do you have to disprove the hypothesis that there is a structural relationship between the Cristianitos Fault and the Whittier Elsinore Fault?
94. What evidence do you have to disprove that there is a structural relationship between the Cristianitos Fault and the El Modena Fault?
95. If the structural relationship between the OZD and the CZD produced oblique-slip movements on the CZD, would the resulting ground motions and response spectra at the site be affected, assuming that movement on the OZD caused sympathetic movement on the CZD?
96. Do you agree that the OZD is one in a series of tectonic bypasses for displacement, and that some percentage of the plate boundary motions in Southern California are taken up on the offshore faults including the OZD? If you disagree, what evidence do you have to support your position?
97. How do you account for the differences in displacement on the San Andreas Fault Zone in Southern California versus Northern and Central California segments of the San Andreas?
98. Have you requested the Applicant to undertake more research including detailed field mapping at the northern extension of the Cristianitos Fault, especially in light of new, unpublished reports, by the CDMG which extend the Cristianitos Fault through the Santiago Creek Basin and through the Silverado Canyon, quite beyond the end of the fault as mapped and portrayed by the Applicants and the Staff in their presentations to the ACRS? If you have not requested more research, justify your lack of concern for an adequate geologic data base.

98. Explain and justify your interpretation of the applicability of the Magnitude 7.5 on the Newport-Inglewood Fault as presented in the USGS Open-File Report 81-115 which was released after the Staff SER was published on December 31, 1980.

99. Why do you not agree with the USGS that the Newport-Inglewood Fault is capable of a Magnitude 7.5 quake? Answer Interrogatories 66a, 66b, 66c, 66c.i and 66c.ii, as if they were written as 99.a, 99b, 99c, 99c.i, and 99c.ii.

100 If the following documents are not available at the LPDR, will the Staff make them available to the Intervenors without a formal request to the Executive Director, as agreed to informally in the past:

- a The Memorandum of Understanding between the NRC-AEC which limits the participation of USGS scientists to requests from the NRC;
- b the NOAA evaluation which led to the .67 g and .44g design criteria;
- c the Profile data and maps presented by SCE in 1980 for review by Greene and Kennedy;
- d the preliminary compilations of profile data which Greene and Kennedy prepared which resulted in their maps and reports in 1980;
- e any internal memos regarding the structural relationship between the OZD and the CZD.

101 How did the NRC-AEC and NOAA arrive at the seismic design criteria values of .67 g and .44 g, in terms of assumptions, data, etc. Explain in detail.

Respectfully Submitted,

Richard J. Wharton

Richard J. Wharton

Attorney for Intervenors

Dated at San Diego, California
this 19th day of February, 1981

CERTIFICATE OF SERVICE

I hereby certify that on the ^{20th}~~17th~~ day of February, 1981, a copy of the foregoing INTERVENOR, FOE ET AL., INTERROGATORIES TO N.R.C. STAFF, Attorney RICHARD J. WHARTON, was served upon each of the following by depositing in the United States mail, first-class, postage prepaid, addressed as follows:

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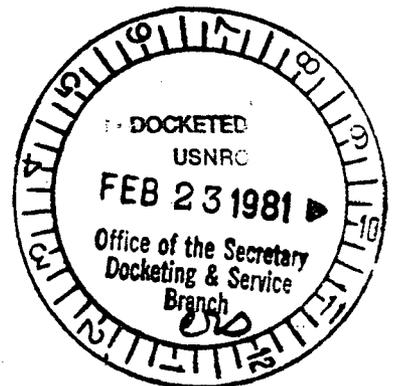
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DATED: February 17, 1981

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/s/ Richard J. Wharton
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FRIENDS OF THE EARTH, ET AL.