



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

Enclosure 2

July 17, 1984

MEMORANDUM FOR: Chairman Palladino
Commissioner Roberts
Commissioner Asselstine
Commissioner Bernthal

FROM: *J. E. Ferbe*
John E. Ferbe, Director
Office of Policy Evaluation

SUBJECT: COMMENTS ON DIABLO CANYON LICENSE CONDITION REQUIRING
SEISMIC REEVALUATION

On March 27 the Commission approved a low-power license for Diablo Canyon that included the following license condition:

"PG&E shall develop and implement a state-of-the-art program to revalidate the seismic design bases used for Diablo Canyon. PG&E shall submit for NRC staff review and approval the proposed program plan and proposed schedule for implementation by January 30, 1985. The program shall be completed and final report submitted to the NRC by July 1, 1988."

The Commission indicated that at the time of full-power licensing it would consider supplementing this condition with regard to the details of the program envisaged by the staff, and by separate request asked for ACRS views on the staff's plan.

By the Secretary's memorandum of April 13, 1984, Commissioner Bernthal requested that OPE comment on the Diablo Canyon "seismic review license condition ... and the appropriateness of the utility taking the lead in this project."

In the light of developments since the low-power license (with the seismic condition) was approved, we offer for your consideration the following comments.

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License Condition

We would expect that, during the course of the normal, interactive staff review of PG&E's proposed program, the staff will assure that the independent program of geologic and seismic studies by NRC and its consultants (including USGS) will be complementary with PG&E's. We note that provision is being made for periodic exchanges of information between the programs, and we expect the staff will keep the Commission informed on progress.

We note that the scope of the reevaluation effort will take into account soil-structure interactions in the Diablo Canyon plants as actually constructed. However, the seismic license condition should not suggest ruling out in advance the continued use of information and techniques unique to Diablo Canyon (e.g., "tau effect"); all available information should be taken into account, not just the latest information. The NRC staff should judge what is acceptable, including use of advanced methods and new information available and appropriate for Diablo Canyon.

We understand that the staff will propose that the licensee undertake a program of deterministic seismological and geological studies, to be followed by both probabilistic and deterministic assessments of the geoseismic findings on the plants as designed and built. The planned approach seems to us to be generally consistent with Commission policy on the proper role of probabilistic analyses. However, any use of PRA should be consistent with the uncertainties and other limitations associated with the PRA state of the art, and there should be an appropriate mix of PRA and deterministic approaches.

PG&E should be assured a definite and sufficient amount of time (e.g., three years) to carry out a staff-approved program. Account should be taken of the time interval between licensee submittal and staff approval; 1988 should be only the nominal target.

Utility and Staff Roles

On June 14, 1984, the staff briefed the ACRS on the detailed license conditions that staff will recommend the Commission approve in making a full-power licensing decision. In its June 20, 1984 letter to the Commission, the ACRS stated:

The NRC staff has proposed to undertake an independent evaluation in parallel with the PG&E efforts. In this program, technical assistance work and limited independent analysis would be utilized as needed for the NRC staff's review of the PG&E work.... We believe that it is appropriate for PG&E to take the lead in the seismic reevaluation and that the NRC staff's independent evaluation can provide adequate review of the PG&E work. We recommend that the NRC effort include a significant support role for the USGS in this regard.

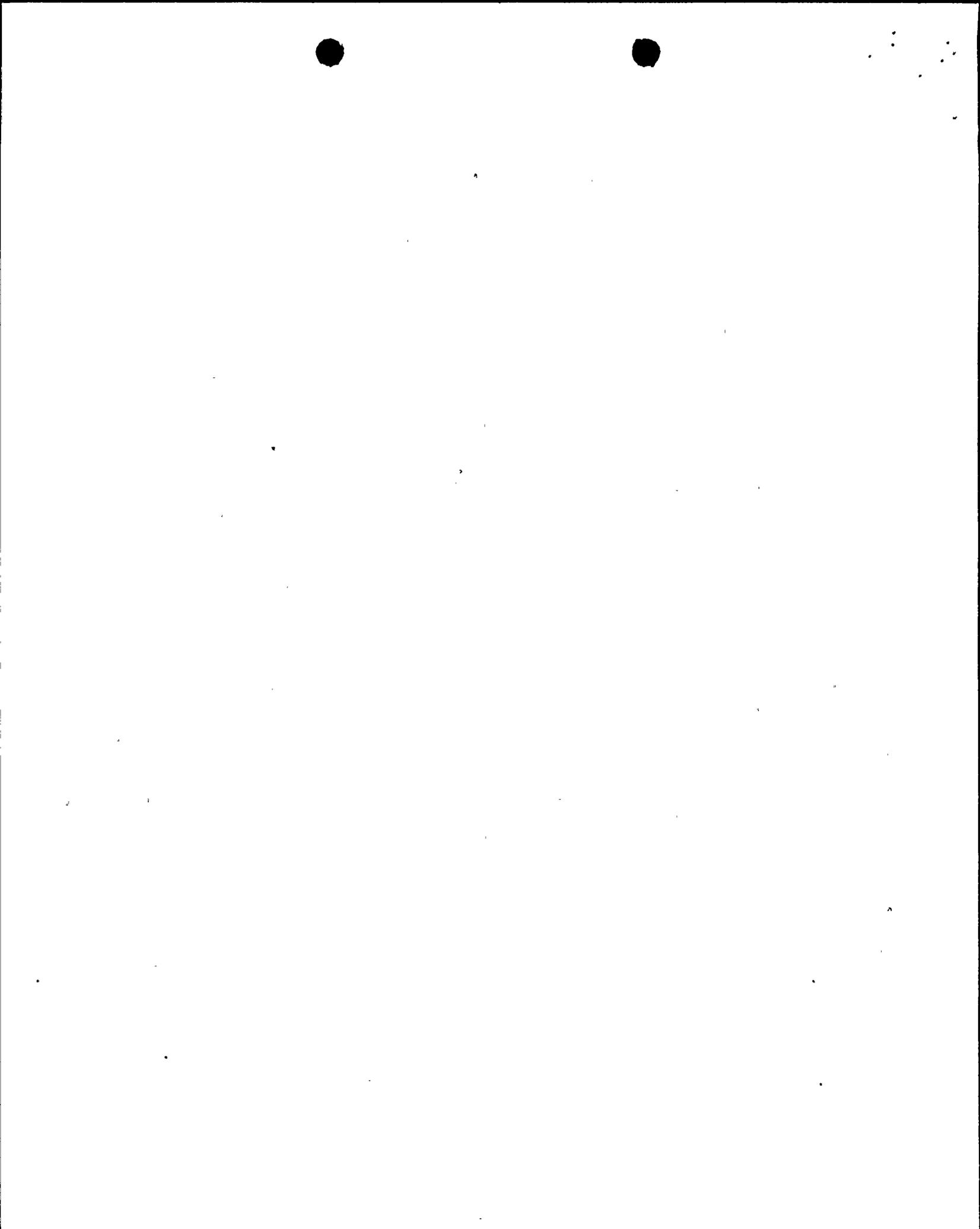


With respect to the question of the "utility taking the lead," we believe consideration of such an approach should take into account fairness to the utility and public credibility of the program results -- particularly the scope and quality of the reevaluation. The licensee has carried the burden at great expense over a long period, getting a CP on one set of geoseismic "facts" and an OL on a new set (the Hosgri). In the face of the errors of construction, the licensee was able for the third time to demonstrate to the staff, the ACRS, several Boards and the Commission itself that the plants are seismically adequate. Even though siting and operating a nuclear power plant in coastal California require continuous attention to new knowledge about tectonics and earthquakes, it would, nevertheless, seem appropriate that NRC share in this burden, in light of the fact that NRC is imposing a reevaluation program.

Furthermore, in view of the uncertainties in the seismic data and techniques used for Diablo Canyon, and the considerable engineering judgment involved, we believe it would be inappropriate for the licensee to "take the lead" in revalidating key aspects of the seismic design basis, e.g., the character of the Hosgri, the SSE magnitude and the maximum vibratory ground motion, if the words "take the lead" were read as implying a passive, if not weak, staff role. In the Diablo Canyon seismic proceeding the positions of the staff and, particularly, its advisors and consultant were the primary determinants of these key seismic design parameters. Thus, we believe that the staff should continue to play an active and strong role with respect to these aspects of the reevaluation effort. If the results indicate a significant increase in the Diablo Canyon seismic loads, then it would be appropriate for the licensee to take on the major burden in providing further proof that the as-built plants are seismically adequate.

In the earth science area, data gathering, particularly on the site itself, has been primarily the function of the utility. With respect to analysis and interpretation of the data, the staff takes a more active, if not lead, role. Having the staff continue to play a strong role may encourage the utility to go beyond what it might otherwise be satisfied with. Correspondingly, the staff's own program will benefit from the results that evolve from the utility's program. Thus, it would seem to us that having two strong, independent, but coordinated, programs would more likely lead to a sound, documented and publicly credible result than the practice of utility submittal and staff evaluation of that submittal alone.

Even though acquisition of proprietary data (such as the oil exploration data analyzed by Crouch) necessary to resolve the seismic question might alone cost hundreds of thousands of dollars, thus far the utility has indicated its willingness to undertake the seismic reevaluation program. Indeed, it seems evident that the utility wishes to maintain some kind of key, if not lead, role in the program. Shifting the burden to the staff does not seem warranted; for example, completely independent staff efforts to the extent of



including standard engineering tests, such as extensive trenching and boring, could result in unnecessary government costs and not utilize the knowledge and skills the utility could bring to bear on the problem. Thus, forcing a lead role on the staff in this area may not be the best solution. The objective ought to be the best decision that can be reached under the circumstances, one that permits the utility and staff programs to be both independent and interactive.

In determining the staff's role in the reevaluation effort, staff resources are a major factor. NRC's ongoing geology and seismology research programs are necessary to provide a long-term data base for NRR operating reactor licensing decisions, but adequate technical assistance resources are necessary for real-time NRR decisionmaking. A strong role should not be seen as "make-work" for the staff; the resources would be only those necessary to maintain the staff's competence to make independent and authoritative decisions on key matters affecting its safety judgments. Moreover, as in other NRR areas of responsibility we are clearly moving from an era of operating license decisions to one primarily concerned with safety oversight of operating reactors. Also, as the need for a mechanism to deal more systematically with new information is not unique to Diablo Canyon, the approach used in Diablo Canyon can help find a better way to deal with the generic problem.

We understand that the staff will reallocate resources to carry out what it now sees as its own seismic reevaluation program for Diablo Canyon seismic revalidation. On the face of it, the figure of about \$150,000 which we understand the staff is considering in FY-85 for this program (including funds for USGS) appears to us to be on the low side of what might be needed to support a staff role sufficient to assure the staff's reevaluation effort is adequately independent. The Commission should assure that staff resources are sufficient to meet the needs of a strong staff role in reevaluating Diablo Canyon seismic adequacy. The Commission may wish to ask the staff what more the staff might consider desirable to do, were higher resource levels available.

cc: S. Chilk
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Diablo Canyon Nuclear Power Plant - Unit 1

Operating License DPR-80

November 2, 1984

2.C.(7) Seismic Design Bases Reevaluation Program (SSER 27 Section IV.5)

PG&E shall develop and implement a program to reevaluate the seismic design bases used for the Diablo Canyon Nuclear Power Plant.

The program shall include the following Elements:

- (1) PG&E shall identify, examine, and evaluate all relevant geologic and seismic data, information, and interpretations that have become available since the 1979 ASLB hearing in order to update the geology, seismology and tectonics in the region of the Diablo Canyon Nuclear Power Plant. If needed to define the earthquake potential of the region as it affects the Diablo Canyon Plant, PG&E will also reevaluate the earlier information and acquire additional new data.
- (2) PG&E shall reevaluate the magnitude of the earthquake used to determine the seismic basis of the Diablo Canyon Nuclear Plant using the information from Element 1.
- (3) PG&E shall reevaluate the ground motion at the site based on the results obtained from Element 2 with full consideration of site and other relevant effects.
- (4) PG&E shall assess the significance of conclusions drawn from the seismic reevaluation studies in Elements 1, 2 and 3, utilizing a probabilistic risk analysis and deterministic studies, as necessary, to assure adequacy of seismic margins.

PG&E shall submit for NRC staff review and approval a proposed program plan and proposed schedule for implementation by January 30, 1985. The program shall be completed and a final report submitted to the NRC three years following the approval of the program by the NRC staff.

PG&E shall keep the staff informed on the progress of the reevaluation program as necessary, but as a minimum will submit quarterly progress reports and arrange for semi-annual meetings with the staff. PG&E will also keep the ACRS informed on the progress of the reevaluation program as necessary, but not less frequently than once a year.

