UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

50-205

May 19, 1964

Mr. C. C. Whelchel
Vice-President
Pacific Gas and Electric Company
245 Market Street
San Francisco, California

Dear Mr. Whelchel:

The ACRS and Regulatory Staff review of the Pacific Gas and Electric Company's application to construct a power reactor at Bodega Head was not completed at the conclusion of the last ACRS meeting. The ACRS plans to consider the matter further at a later meeting.

Additional definitive information is requested in respect to the particular items set forth below. These items have been developed in discussions between members of our staff and of the ACRS, and although there may be some overlap between some of the items, it would be helpful if you would respond to each as comprehensively as is feasible.

1. The Company's amendment #7 of March 31, 1964, indicates that designs will accomodate a few inches of shear movement in the foundation. The amendment further states that offsets up to 2 feet would damage the building but would not impair containment. It is not clear to us from the information submitted how your design plan would achieve this objective.

The record in this case includes a report from the Geological Survey dated December 1963 (TEI-844) in which it is stated that "displacement on the order of a few feet, either horizontally or vertically, should be anticipated." A primary question concerns the ability of the plant, located approximately a thousand feet west of the edge of the San Andreas fault zone, to withstand as much as a few feet of shear displacement without undue hazard to the health and safety of the public. Assuming, for two different cases, total shear displacement of as much as (a) 2 feet, (b) 3 feet, including both horizontal and vertical

Temp Suspend G

components, along any line and in any direction in the foundation, would the plant, as designed or as you may propose to modify the design, be constructed so that:

(i) the structure and leak tightness of the containment building would not be impaired?

(ii) the ability to shut down the reactor and maintain it in the shut down condition would not be impaired?

(iii) primary system would remain intact? and

(iv) supply of power to the facility would not be interrupted?

If so, please describe the specific means and arrangements, including any modifications in the designs you have heretofore submitted, to accomplish this.

Under the displacement assumptions stated above, what measures are proposed to assure that the reactor could be maintained safely in a shut down condition indefinitely if all vital connections to the reactor building were severed? Additional related questions include the following:

a. What are the arrangements (pumps, power sources, connecting lines) which give confidence that the reactor could still be shut down by normal or by alternate systems?

b. For what direction or directions of ground slippage are vital internal components most vulnerable in case of damage to the building? How would vital safety components inside the building be protected against damage if the building were damaged by slippage?

c. What and where are the vital components of emergency electrical power sources? What equipment would they serve and on what time schedules?

d. What are the alternative sources of emergency cooling? Where are their vital components and what assurance is there that these would not be inactivated by any accident which might inactivate the primary cooling system? What are their capacities and time schedules of effectiveness?

If the Company consideres that assumptions, criteria, or design objectives different from those stated in the questions contained under item 1 above could be used and provide adequate protection, please describe these and explain how they would be met.

2. If damage should exceed all expectations and actual core meltdown appeared imminent, or if decay heat from released fission products was causing pressure buildup which threatened the integrity of the containment, what actions might be taken to prevent the meltdown? What devices and preparations could be made in advance? What time schedules would be involved?

3. What is the degree of damage to the reactor building and the reactor to be expected from shear displacement along any line crossing the reactor building shaft? This analysis should not assume a size of displacement. What is desired is damage as a function of displacement. What displacement leads to fracture of the concrete structure? What displacement would rupture the containment? What displacement would lead to rupture of the primary reactor system? It is vital that these judgments be based on features of the system as it is to be built, and not be supported only in general terms. The effects of both shear and tensile strains should be considered.

4. We wish to be sure we understand the specific methods the Company proposes to use to analyze the ability of the structures to withstand earthquake oscillations. Some new features of the analysis were introduced at the last ACRS meeting. Does the Company propose to modify the frequency spectrum previously proposed (based on El Centro, 1940) to take into account the rock foundation at the Bodega site?

5. What measures would be taken to protect against tsunamis greater in size than the breakwater at Bodega Bay would suppress?

Sincerely,

/s/ Harold L. Price

Harold L. Price
Director of Regulation