AUG 26 1964

50-205

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

Dear Mr. Whelchel:

The Regulatory Staff and the ACRS are continuing their review of the Pacific Gas and Electric Company's application to construct a power reactor at Bodega Head. To clarify certain points in your Amendment No. 8 filed on July 21, 1964, answers to the following questions are requested:

1. The amendment states on page 24 that "a detailed dynamic analysis will be made" for certain vital pieces of equipment. The acceleration to be used for this analysis should be described fully. Although it is recognized that, as discussed in the amendment, the layer of sand beneath the reactor building would affect the transmission of horizontal forces to its base, various considerations suggest that the design of equipment vital to safety inside the reactor building should, nevertheless, take into account accelerations of the maximum intensity postulated in my letter to you of July 8, 1964. On this basis, a motion of the base of the reactor building having maximum transient horizontal components corresponding to a maximum transient acceleration of 1g, a maximum transient velocity of 2-1/2 ft/sec and a maximum transient displacement of 3 ft, and vertical maxima of 2/3 of the preceding should be considered. With regard to the analysis of vital equipment, your response should indicate what margins against failure to function properly would exist in this equipment at various levels of acceleration up to 1.0g, especially for those items of equipment for which factors other than yielding, fracture, or structural failure govern (e.g. clearance, displacement, acceleration, etc.).

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2. The design of vital piping connections to the reactor building, including the main steam piping, involves the dual requirement of flexibility to resist relative motions corresponding to a fault motion of up to 3 feet, and strength to resist the forces accompanying the dynamic response to the earthquake vibration. It has not been clearly shown in the amendment how the conflicting design requirements for these two sources of strain will be achieved. What methods are proposed to be used to avoid overstress in the piping, or if yielding is to be permitted, what significance will the yielding have on the performance of the piping, any isolation or other valves in the piping, the pipe anchors, and other features of the piping design.

What arrangements will be made to prevent shearing or other failure of the main steam piping and other vital connections to the reactor building caused by the fault motion, specifically by contact of concrete walls, rock, earth, etc. against the piping in the course of either the fault motion or the earthquake vibration.

3. Since faulting may occur at other locations than at the reactor containment structure, what provisions will be made in the design of vital piping connections other than those to the reactor building to insure the integrity of these connections in the event of fault motion up to 3 feet occurring in any location on the plant site.

Sincerely yours,

/S/ Doan

Richard L. Doan
Director
Division of Reactor Licensing

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Docket No. 50-205

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

Dear Mr. Whelchel:

The Regulatory Staff and the ACRS are continuing their review of the Pacific Gas and Electric Company's application to construct a power reactor at Bodega Head. To clarify certain points in your Amendment No. 8, answers to the following questions are requested:

1. The amendment states on page 24 that "a detailed dynamic analysis will be made" for certain vital pieces of equipment. The acceleration to be used for this analysis should be described fully. Although it is recognized that, as discussed in the amendment, the layer of sand beneath the reactor building would affect the transmission of horizontal forces to its base, various considerations suggest that the design of equipment vital to safety inside the reactor building should, nevertheless, take into account accelerations of the maximum intensity postulated in my letter to you of July 8, 1964. On this basis, a motion of the base of the reactor building having maximum transient horizontal components corresponding to a maximum transient acceleration of 1g, a maximum transient velocity of 2-1/2 ft/sec and a maximum transient displacement of 3 ft, and vertical maxima of 2/3 of the preceding should be considered. With regard to the analysis of vital equipment, your response should indicate what margins against failure to function properly would exist in this equipment at various levels of acceleration up to 1.0g, especially for those items of equipment for which factors other than yielding, fracture, or structural failure governs (e.g. clearance, displacement, acceleration, etc.).

2. The design of vital piping connections to the reactor building, including the main steam piping, involves the dual requirement of flexibility to resist relative motions corresponding to a fault motion of up to 3 feet, and strength to resist the forces

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What arrangements will be made to prevent shearing or other failure of the main steam piping and other vital connections to the reactor building caused by the fault motion, specifically by contact of concrete walls, rock, earth, etc. against the piping in the course of either the fault motion or the earthquake vibration.

3. Since faulting may occur at other locations thanret the reactor containment structure, what provisions will be made in the design of vital piping connections other than those to the reactor building to insure the integrity of these connections in the event of fault motion up to 3 feet occurring in any location on the plant site.

Sincerely yours,

Harold L. Price
Director of Regulation

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