June 11, 1984

Dr. R. Savio
Senior Staff Engineer
Advisory Committee on Reactor Safeguards
U.S. Nuclear Regulatory Commission
Washington D.C. 20555

Dear Dick:

Since I will not be able to attend the June 14 meeting in Washington D.C., I am sending a few comments in connection with the matters discussed at the Los Angeles meeting of May 24, 1984.

With respect to the seismic revalidation study proposed as license condition I have the following comments:

a) To increase the credibility of such a study I believe that it would be necessary that the data to be considered, the methods of analysis and the various modelling assumptions be established by consensus by a group specialists representing PG & E, NRC staff and ACRS. The calculations would then be performed by PG & E or its consultants.

b) As I suggested at the May 24, 1984 subcommittee meeting in Los Angeles I believe that analysis of the accelerograms obtained within and in the vicinity of the Diablo Canyon Plant should be part of the proposed study. These records contain valuable information as to the effects of soil-structure interaction, foundation embedment and spatial variation of ground motion. The records can also be used to validate low amplitude structural models and analysis techniques.

c) The proposed study should include analysis of the inelastic response of the Diablo Canyon plant structures under strong earthquake ground motion.

With respects to the implications of the paper by Crouch, Bachman and Shay I have the following comments:

(a) Recent theoretical studies (e.g. Anderson and Luco, B.S.S.A., 73, 45-57, 1983) suggest that the motion on the upper block on a thrust fault configuration can be higher than that for a vertical strike-slip fault for the same slip on the fault. The correlations developed by Campbell (1983) also show higher peak accelerations for thrust faults for the same magnitude and distance. The differences between strike-slip and thrust faults apparent in the correlations are probably influenced by the San Fernando 1971 thrust earthquake. A recent April 1984, M = 6.2 strike-slip earthquake in the vicinity of San Jose produced a record on the fault with a peak acceleration of 1.3g. The records obtained in this earthquake will probably increase the estimates of peak acceleration for strike-slip earthquakes and will reduce the differences between strike-slip and thrust events.

(b) The possibility that the distance from the site to the Hosgri fault may by as short as 2.5 km raises some concern in my mind. Records at short distances to faults (less than 5 km) reveal a strong velocity pulse (peak velocities excess of 100 cm/sec) of considerable duration. This type of pulse can be damaging to structures stressed into the inelastic range.

Sincerely yours,

J. Enrique Luco

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