



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

PDR

November 6, 1989

The Honorable David Roberti  
California State Senate  
205 State Capitol  
Sacramento, California 95814

Dear Mr. Roberti:

I am responding to your letter of October 18, 1989, concerning potential safety implications for the Diablo Canyon Nuclear Power Plant of the October 17, 1989 earthquake near San Francisco (the "Loma Prieta" earthquake). You expressed concern that the plant may have suffered undetected damage as a result of this earthquake and requested that the NRC send a team of engineers and geologists to the plant to reassess its structural integrity and to review emergency safety procedures.

The Diablo Canyon plant was designed to withstand much stronger earthquake motion than that produced by the Loma Prieta earthquake at the plant site. The seismic analysis used by the NRC as a basis for licensing of the plant assumed a magnitude 7.5 earthquake on the Hosgri Fault, which is located about 3 miles from the plant. In this analysis, the peak ground acceleration at the plant was estimated to be 0.75 g. The plant was licensed on the basis of its ability to withstand this peak ground acceleration and still achieve a safe shutdown.

The Loma Prieta earthquake had a magnitude of 7.1 and was located about 140 miles from the plant. Nuclear Regulatory Commission (NRC) staff seismologists estimated that this earthquake would produce a peak ground acceleration at Diablo Canyon of less than 0.01 g. Seismic instruments at Diablo Canyon actually recorded a peak acceleration of 0.0044 g, which is 170 times less than the 0.75 g acceleration used in the seismic analysis of the plant.

When the earthquake struck at 5:03 p.m. PDT on October 17, 1989, Diablo Canyon Unit 1 was shutdown for refueling and Unit 2 was operating at full power. In accordance with previously reviewed plant procedures, the licensee (Pacific Gas and Electric Company) declared an "unusual event". Fuel movement at Unit 1 was halted, and plant operators performed a physical inspection of both units and found no abnormalities. At 7:30 p.m. PDT, after verifying that no damage was sustained by either unit, the licensee terminated the unusual event. No licensing requirements were compromised and no radioactive material was discharged to the environment. Both the Pacific Gas and Electric Company and the NRC have conducted inspections of the plant since the earthquake and have found no earthquake damage. Based on (1) the inspections conducted at the

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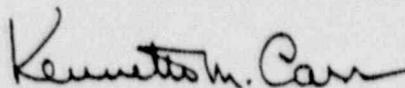
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plant, (2) the minor effects felt and measured at the plant, (3) the fact that no damage was observed after other earthquakes with a stronger effect on the plant, and (4) the fact that the plant was designed and analyzed to withstand much more severe earthquakes than the Loma Prieta earthquake, we believe that the possibility of undetected damage at Diablo Canyon due to the October 17, 1989 earthquake is remote.

In addition, the NRC and the licensee have been reassessing the seismic design of Diablo Canyon since 1985. This seismic reevaluation program, also known as the Long Term Seismic Program (LTSP), was initiated by the NRC to reassess the Diablo Canyon plant in view of recent advances in the state of the art of seismic design based on new analytical methods and new earthquake data. This program, which is nearing completion, involves a reassessment of the entire seismic design process, from geologic and seismologic information to the ability of structures to withstand seismic forces. The Loma Prieta earthquake will be included in the data base evaluated by this program. In that regard, NRC staff seismologists and structural analysts visited the San Francisco Bay area soon after the earthquake to observe its geological and structural effects. Moreover, the staff has already reviewed a report by the California Department of Conservation's Office of Strong Motion Studies entitled "Quick Report on CSMIP [California Strong Motion Instrumentation Program] Strong-Motion Records from the October 17, 1989 Earthquake in the Santa Cruz Mountains." NRC staff who have reviewed this report see no indication that the ground motions recorded from this event were of particular significance to the seismic safety of Diablo Canyon.

I believe that the actions we have taken to date have been both prudent and consistent with the course of action you recommended. If you have any further concerns regarding this matter, please contact me or Mr. John B. Martin, Regional Administrator of our Region V Office, 1450 Maria Lane, Suite 210, Walnut Creek, California 94596.

Sincerely,

  
Kenneth M. Carr