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Hidden faults may have added to damage from earthquake

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SAN FRANCISCO — In the most comprehensive scientific report to date on the Oct. 17 earthquake, federal geologists said Monday that hidden underground faults may have added to the damage and they called for more attention to the surprisingly widespread ground cracks that affected roads and buildings near the epicenter of the quake.

Heavy damage in one part of the otherwise untouched city of Los Gatos — suggested "secondary movement on one or more of the southwest-dipping thrust faults," which are difficult to study because they often do not break the surface, according to the report by the U.S. Geological Survey. Thrust faults have drawn much attention since one was identified as the source of a damaging October 1987 quake near Los Angeles and two previously undetected thrust faults were discovered under that city.

The USGS report on lessons learned from the 7.1 magnitude Oct. 17 earthquake was released at a special session of the fall national meeting of the American Geophysical Union, the scientific society of geologists.

Richard Andrews, deputy director of the California office of emergency services, said modern "nonductile" concrete structures like the Oakland freeway that collapsed in the quake may present the greatest hazard in future large quakes because they remain brittle despite steel reinforcement. Rep. George E. Brown Jr., D-Calif., bemoaned the pre-quake decline in funding for the National Earthquake Hazard Reduction Program. It revealed "our national tendency to react to events rather than anticipate them," he said.

But most of Monday's reports concerned unusual scientific features of the Oct. 17 earthquake, such as its failure to show any significant surface break of the San Andreas fault.

USGS geologist Daniel J. Ponti noted the 8.3 magnitude 1906 San Francisco earthquake, which created significant breaks north of San Francisco, also produced no primary surface faulting in the Santa Cruz Mountains area, which is south of the city, apparently because of complex underground structures at a point where the San Andreas bends.

Instead of a surface fault, the earthquake produced "a zone as much as three miles wide of numerous ground cracks," said the USGS report.

The cracks were large enough to damage houses and roads and apparently trigger landslides.