



UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY

Western Region Headquarters  
345 Middlefield Road  
Menlo Park, CA 94025

Further information:  
Mary Hill, 415-323-8111, Ext 2953  
Bob Page, 415-323-8111, Ext 2461

For release: IMMEDIATE (Mailed February 12, 1976)

NOTE TO EDITORS: Map attached

GUATEMALAN QUAKE CULPRIT FAULT IDENTIFIED

First reports from the U.S. Geological Survey earthquake investigation team in Guatemala identify the Motagua fault as the main cause of the major (7.5 Richter scale) earthquake of February 4, 1976.

The fault runs roughly east-west from a point about 15 miles (25 kilometres) north of Guatemala City, eastward probably as far as Puerto Barrios near the Gulf of Honduras.

During an air reconnaissance of the Motagua fault zone, the USGS scientists observed fault breakage along a 100-mile (160-kilometre) stretch of the fault.

The epicenter of the main shock--the point on the fault where rupture began--has been pinpointed by the Survey's National Earthquake Information Service at Latitude 15.27°N and Longitude 89.25°W, about 20 kilometres west of Los Amates, south of Lake Izabal.

-more-



Dr. George Plafker, of the Survey's Menlo Park, California, field center was one of several USGS scientists dispatched to Guatemala. He, together with Guatemalan geologists, identified the Motagua fault as the primary source of the energy that caused widespread destruction.

Plafker said, however, that the shorter Mixco fault, which is at right angles to the Motagua, also caused damage. The Mixco fault, which lies only 6 miles (10 kilometres) west of Guatemala City, was broken along at least 10 miles (16 kilometres) of its length. Although it is shorter than the Motagua fault, its closeness to Guatemala City makes it, too, dangerous. Scientists believe that the length of fault breakage is related to the energy released in an earthquake.

In terms of energy, the Guatemala earthquake released about 90 times the amount of energy released in the Managua, Nicaragua, earthquake of 1972, but only about 1/16 the energy of the San Francisco earthquake of 1906.

Plafker said that it was difficult to determine the extent of rupture along the Motagua fault. "It may extend farther east-- perhaps to Puerto Barrios," he said, "but it passes into a swampy area where we could not see it. Nor could we see the fault rupture farther west, as landslides in the steep mountains obscured it. Because roads and railroads follow the fault valley, they have been blocked and are now unusable.

"The west end of the Motagua fault as well as the Mixco fault are in volcanic terrain, dominated by intermittently active volcanic cones. There were no verified reports, however, of eruptions of any volcano," Plafker said.

-more-

Like California, Guatemala is known "earthquake country." Both the Motagua and Mixco faults were already recognized as active. The Motagua fault separates the great North American and Caribbean plates of the earth's crust. These plates and the few others that form the earth's lands and seas are, according to geologic theory, "floating" on an underlying layer of plastic rock near the top of the earth's mantle. When plates slide past each other as these two did in Guatemala, and as two plates do in California along the San Andreas, faults break and the earth shakes.

Plafker is part of the initial U.S. Geological Survey team sent to Guatemala immediately after the February 4 earthquake occurred. Other team members are Charles Knudson, also of the Survey's Menlo Park field center; Alvaro Espinosa and Raul Husid of the Survey's Denver, Colorado, field center. Accompanying the team is Karl Steinbrugge, earthquake engineer, travelling on behalf of the USGS. He is a professor at the University of California at Berkeley.

A second USGS team dispatched to the Guatemalan region consists of Manuel G. Bonilla, Menlo Park, Charley Langer and Jean Whitcomb, Denver. These scientists, with Arturo Aburto, Director of the Managua, Nicaragua, Seismic Institute, are aiding the first US teams.

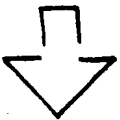
Aburto, Langer, and Whitcomb have been monitoring aftershocks with portable seismographs in an effort to pinpoint aftershock locations in relation to geologic structures and damaged towns and villages. Bonilla is a specialist in the geologic effects of earthquakes.

The US scientists are cooperating with ICAITI, a Central American research organization headed by Dr. Gabriel Dengo, and the Instituto Geográfico Nacional represented by Drs Oscar Salazar and Samuel Bonis. Both organizations are headquartered in Guatemala City.

Part of the Guatemala research is being funded by the Organization of American States.

-end-

81





U.S. Geological Survey scientists have identified the Motagua fault as the main cause of the major (7.5 Richter scale) earthquake of February 4, 1976. This fault passes about 15 miles north of Guatemala City. The map shows the length of rupture on the Motagua fault as well as than on the shorter but closer and still dangerous Mixco fault west of Guatemala City.