By Jim Hayes

Staff Writer

An undersea scarp — a 10-foot-high displacement in the ocean floor that could have been caused by an earthquake fault only about a mile offshore from the site of Pacific Gas and Electric Company's nuclear plant site at Diablo Canyon — has been discovered by scientists aboard a U.S. Geological Survey research vessel.

Word that seismic recording devices aboard the George B. Kelez had traced a possible fault "several miles long" on the continental shelf in depths as shallow as 100 feet was hurriedly communicated to the Atomic Energy Commission in Washington, D. C. last week.

"Our findings appear to be of considerable importance," said Gary Greene, who was chief scientist on the research vessel for nine days in mid-November while the Kelez was sailing criss-cross patterns off the Central Coast from Point Sal North to Point Sur.

"What we have found," said the 35-year-old marine geologist in a telephone interview Friday with the Telegram-Tribune from his home in Santa Clara "are some features which appear to be faults on the ocean floor.

"The displacement could be from an active fault, say of recent geologic time, or about 100,000 years ago.

"The other possibility is that it is what we call differential erosion — the result of wave action in recent geologic times after the general uplift of the coast."

Greene, a graduate of Long Beach State and San Jose State University who's now completing work on his doctorate in marine geology at Stanford, said he has studied similar ocean floor displacements in Monterey Bay. There, he pointed out, "the scarps were associated with active faults."

It was on one of these northern studies, in late 1970, that Greene helped to throw a scientific monkey wrench into PG&E's plans to build a nuclear generating plant near Davenport in Santa Cruz County.

"I was the chief scientist on that survey," said Greene. "We knew there were faults offshore. We took a closer look and discovered that they were active. It was two years from the time we began gathering our data there until it was published. In the meantime, they dropped plans for the plant.

"Of course, PG&E had other problems there. There was the fault at Ano Nuevo and then they had a landslide."

Greene said part of the seismic survey conducted from the research vessel George B. Kelez was paid for by the AEC.

"USGS was going to do some overall studies in the area and the commission asked us to take a more detailed look at Estero Bay and the area offshore from Diablo Canyon," he explained.

He described the research vessel Kelez as a 164-foot ship "very much like the Pueblo that was used in North Korea."

Aboard the ship, Greene and the members of his geophysical team operate highly sensitive instruments which give a profile of the rocks beneath the ocean floor. As the ship sails a grid pattern on courses that produce one-mile squares, an underwater spark is flashed every four seconds. The sound waves travel through the ocean to its floor, bounce back from beds of various density and are picked up by hydrophones to be printed out on a facsimile recorder.

"What we get," Greene explained, "is a picture of the ocean bottom as if it had been laid open with a knife."

The picture Greene watched on his recording device as the ship plowed back and forth offshore from the rocky coast at Diablo Canyon showed that there was a layer of miocene rock — presumed to be about seven million years old — underlain by cretaceous deposits that might be as old as 20 million years.

"But the minute we found the scarp — this displacement of eight to 10 feet in the floor — we suspected the presence of a fault."

Greene said the displacement "crossed several lines."

In other words, he explained, the scarp appeared to run for "several miles" parallel to the coast — which trends northwest to southeast at Diablo Canyon.

"Length, becomes a critical factor," the geologist added. "Generally, the longer the fault, the more recent and active we think it is."

It's not surprising to find such displacements off the Central Coast, Greene said, explaining that its significance would have to be analyzed by Geologic Survey scientists.

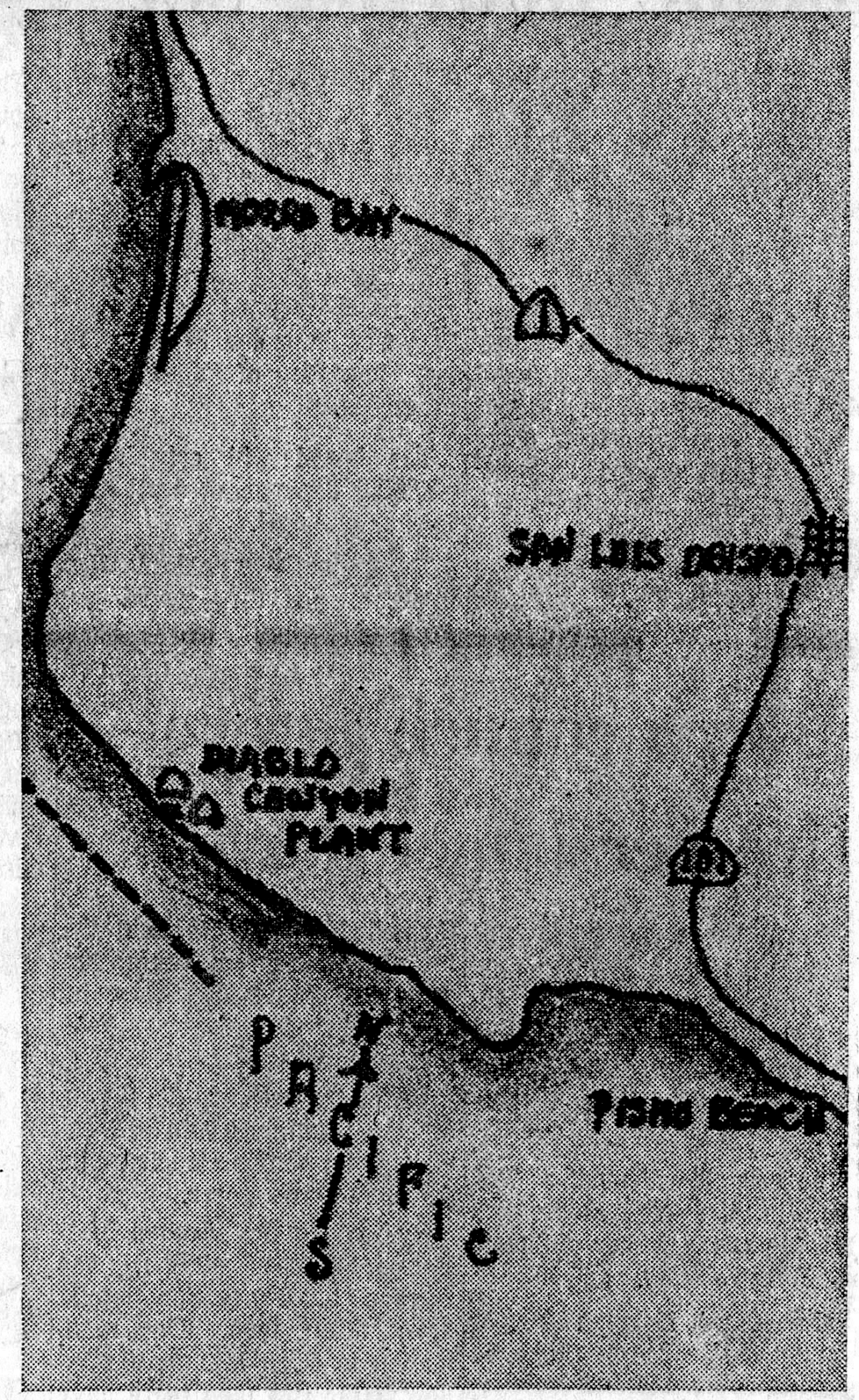
"Our normal procedure," he said, "would be to give a sort of 'in-house' preliminary report to the AEC because they helped pay for the study.

"But if there's enough public pressure, we might open our files to PG&E and to the public. We've already had several inquiries about it, some going directly to Washington."

(Unit 1 of the Diablo Canyon project is expected to be completed by August, 1974 and Unit 2 by a year later. No date had been set for licensing hearings which must be held before AEC will permit the PG&E plant to go into operation.)

Greene said the next step in investigating the possibly active fault would be to set up a monitoring program.

"Unfortunately," he added, "we don't have any seismic monitoring stations that can be set up in the ocean. Our National Center for Earthquake Research is working on that now."




Dotted line shows location of scarp.