√Those other faults

By TOM HARRIS
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They flank the densely populated San Francisco Bay Area like opposite forks of a wishbone.

Somewhere along their combined 140 miles, the jagged tines represented by the San Andreas and Hayward faults will be snapped by planetary forces and the resulting vibrations could bring death and destruction on a wholesale scale to some of the nation's most popular ZIP codes.

It could happen today, tomorrow, next week or next year. But when it comes — when, not if, say those who have closely considered the odds of such seismic events — the stuffy language of "probabilistic calculation" will become stark, terrifying reality.

Regionally, say those of the U.S. Geological Survey working on earthquake predictions, there is a 50-50 chance that the Bay Area will suffer a quake equal to or greater than last month's 7.1 temblor in the next 30 years.

Whether the next magnitude-7 shaker is on the Peninsula or on the Hayward Fault, which snakes along the western face of the East Bay foothills, is considered a virtual toss-up by most experts. They figure the risk on each of three fault segments is the same — a one in five, or 20 percent, chance over the next 30 years.

Those segments include two on the Hayward link — one south of Fremont and one north through Oakland and Berkeley — and on the Peninsula segment of the San Andreas.

On the Peninsula segment, the prime impact zone is much closer to San Jose and San Francisco because of the transferred energy from the Oct. 17 quake.

However, cautioned USGS seismologist Alan Lindh, "It is not as though, suddenly, it is time for a 1906 event again. In fact, our confidence is growing that '06 is another 100 years away, at least.

"But the Loma Prieta event will impact, perhaps significantly, how much sooner another magnitude 7 occurs along the Peninsula segment.

"My guess," added Lindh, "is that it now probably will be sooner than we thought."

How much sooner is as much a function of what Lindh calls "geological intuition" as it is the sophisticated calculations and interpretations that went into the agency's recent forecast on the odds of large quakes on the San Andreas system.

That system is between two tremendous blocks of the Earth's crust, called tectonic plates, which float on a molten core. The coastal section dips under its continental neighbor and slides slowly — at millimeters per year — northward.

The lengthy debates on the next big quake dealt with such obvious factors as the length of fault lines, the amount of slippage as the Pacific tectonic plate grinds inexorably along the more stable continental plate and how long since the last major tension release.

The San Andreas is a giant cleavage between the two plates, a fracture line that in some places reaches a depth of 20 miles. As the uneven surfaces grind past each other, jagged edges often get hung up in a seismic lock zone that gradually accumulates stress and strain until it reaches the breaking point.

The resulting upheaval may be only a settling of geological accounts between the migrating blocks. But when it reaches 7.1 on the Richter scale, as it did at 5:04 p.m. on that fateful Oct. 17, it becomes a wild, frightening and very unpredictable human event.

Just how unpredictable is of greater interest now than 21 days ago, especially to nervous Bay Area residents being force-fed a steady diet of seismic and structural engineering reality.

But all of those predictions will have to be tested by how well the theories of probability stood up to the working group's highest risk: a 30 percent probability of a 6.5 or greater event on the Santa Cruz section of the San Andreas Fault.

"In some very limited sense, we did forecast that one fairly accurately," said Lindh. "In fact, you might say we were a bit conservative on the time. But it might be that we were only lucky.

"We might not really know anything," he added. "Being half-right once doesn't prove you know what you are talking about. There is always the possibility that the gods are playing with us; that it was just coincidence."

Group members say they are uneasy, however, about the increasing depth of epicenters — the spot where the break starts and from where the frightening energy release is focused.

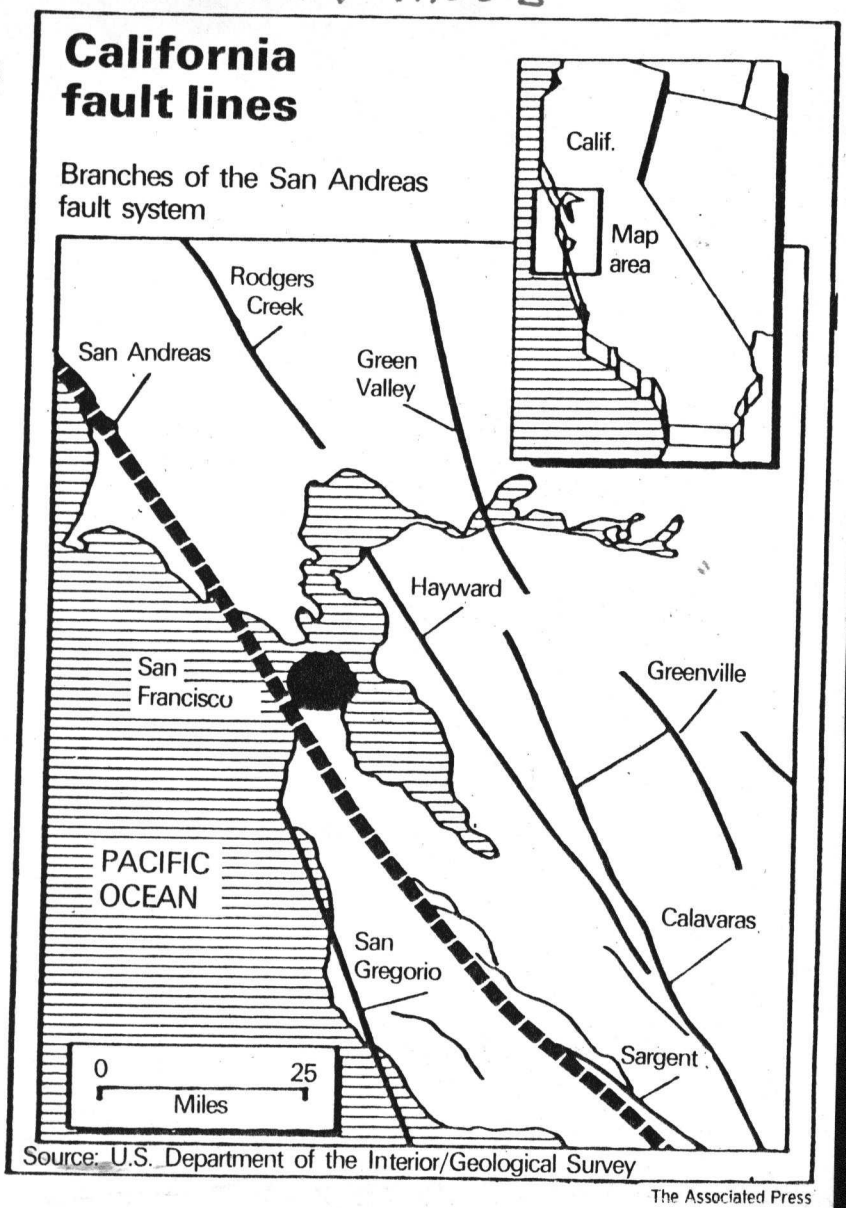
Traditional strike-slip quakes, where the breakage allows the coastal plate to lurch a meter or two to the north, are comparatively shallow events, occurring within a few miles of the surface.

That, says Lindh, could make them capable of storing less pent-up energy than the thicker, deeper ruptures.

The deeper quakes could lead scientists to change estimates of amount and rate of movement and strongly influence calculations of how big a quake is building and how soon it might be triggered.

The Santa Cruz Mountains quake started 11 miles down. And there have been dozens of equally deep-seated micro-quakes there in recent years, though they were too small to be felt by anything but sensitive instruments.

Lindh says "a bit of a debate has raged" over how to interpret the depth information. "Now," he added, "something has to be worked out."



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