FIGURE 1. Seismograms from three seismograph stations indicating an earthquake at an unknown epicenter.

TABLE 1: Calculations to determine location of earthquake epicenter.

<table>
<thead>
<tr>
<th>Sensor / Seismograph Station</th>
<th>Time of Arrival of P-wave</th>
<th>Time of Arrival of S-wave</th>
<th>Difference in Time between P and S waves (seconds)</th>
<th>Constant/Multiplier X 5 miles/sec.</th>
<th>Distance of Sensor (Seismograph Station) from Epicenter (miles)</th>
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</thead>
<tbody>
<tr>
<td>1</td>
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Triangulation - Exercise #3

Earthquake Shaking Potential for California
Spring, 2003

This map shows the relative intensity of ground shaking and damage in California from anticipated future earthquakes. Although the greatest hazard is in the areas of highest intensity as shown on the map, no region in the state is immune from potential for earthquake damage. Expected damages in California in the next 10 years exceed $30 billion.

Important messages about earthquakes for Californians to remember:

1. Earthquakes have produced over $85 billion in losses in California since 1971. The next large earthquake may produce even greater losses, especially if it affects a major urban area. California’s two largest urban centers lie in the State’s highest seismic hazard zones.

2. A large earthquake in or near a major urban center in California will disrupt the economy of the entire state and affect much of the nation. Effective disaster planning by State and local agencies, and by private businesses, can dramatically reduce losses and speed recovery.

3. Current building codes substantially reduce the costs of damage from earthquakes, but the codes are intended only to prevent widespread loss of life by keeping the building from collapsing, not to protect the building from damage.

4. If the Northridge or Loma Prieta earthquakes had occurred closer to a major population center, fatalities would have been much higher. The earthquake in Japan (over 8,000 deaths), Taiwan (over 2,000 deaths), and Turkey (over 26,000 deaths) produced catastrophic death tolls.

5. After a large earthquake, residents and businesses may be isolated from basic police, fire, and emergency support for a period ranging from several hours to a few days. Citizens must be prepared to survive safely on their own, and to aid others, until outside help arrives.

6. Maps of the shaking intensity after the next major earthquake will be available within minutes on the Internet. The maps will guide emergency crews to the most damaged regions and will help the public identify the areas most seriously affected.

Efforts to reduce the losses from earthquakes have already proven effective. California’s enhanced building codes, strengthened highway structures, higher standards for school and university, police and fire station construction, and well prepared emergency management and response agencies, reduced deaths, injuries and damage in recent earthquakes. Strengthening of older buildings, gaining a better understanding of California’s earthquake threat, and continued education and preparedness will pay an even greater dividend to Californians in speeding response and recovery after future earthquakes.