

KING SAUD UNIVERSITY  
 COLLEGE OF SCIENCES  
 GEOLOGY & GEOPHYSICS DEPT.  
 GPH 312 EARTHQUAKE SEISMOLOGY I

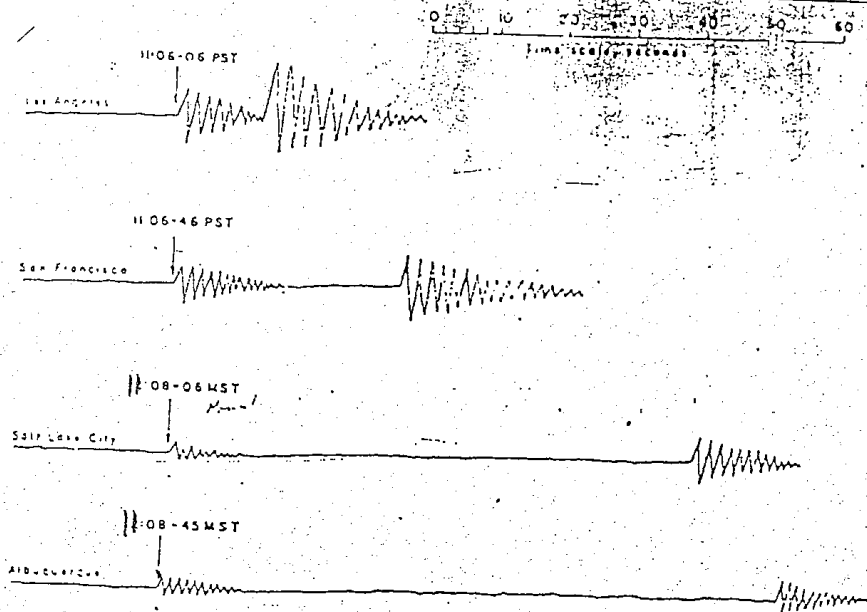


Figure 3. Seismograph records.

(2) Assuming an average velocity of 3.80 miles/sec for the P-waves and 2.54 miles/sec for the S-waves, how long does it take for each type to travel 100 miles? Show how you arrived at your answer.

P-waves \_\_\_\_\_ sec S-waves \_\_\_\_\_ sec

What is the time lag at this distance (100 miles)?

Answer: \_\_\_\_\_ sec

(3) Determine the distance from each of the four seismograph stations to the focus of the earthquake. Distance may be computed by proportion, using the time-lag value for 100 miles that you obtained in (2) for reference.

Los Angeles \_\_\_\_\_ miles Salt Lake City \_\_\_\_\_ miles  
 Albuquerque \_\_\_\_\_ miles San Francisco \_\_\_\_\_ miles

(4) On the map of the western United States (Fig. 4) draw compass arcs with centers at the four stations and the radii corresponding to the computed distances. Where is the epicenter located?



Figure 4.1. Map of the western United States.

15. Given the cause of earthquakes discussed earlier, what major structural feature shown on the Geologic Map (or Tectonic Map) of the United States is probably related to this earthquake?

16. The time at which the P-wave arrived at each of the four stations is shown on the seismograph record. When did the quake actually occur? Show how you obtained your answer.

THIS PROBLEM IS, OF COURSE, AN IDEAL ONE. WHAT IS THE BASIC ASSUMPTION UNDERLYING YOUR CALCULATION WHICH HELPS TO MAKE IT SO?