

Lab 8 - Seismology - KEY

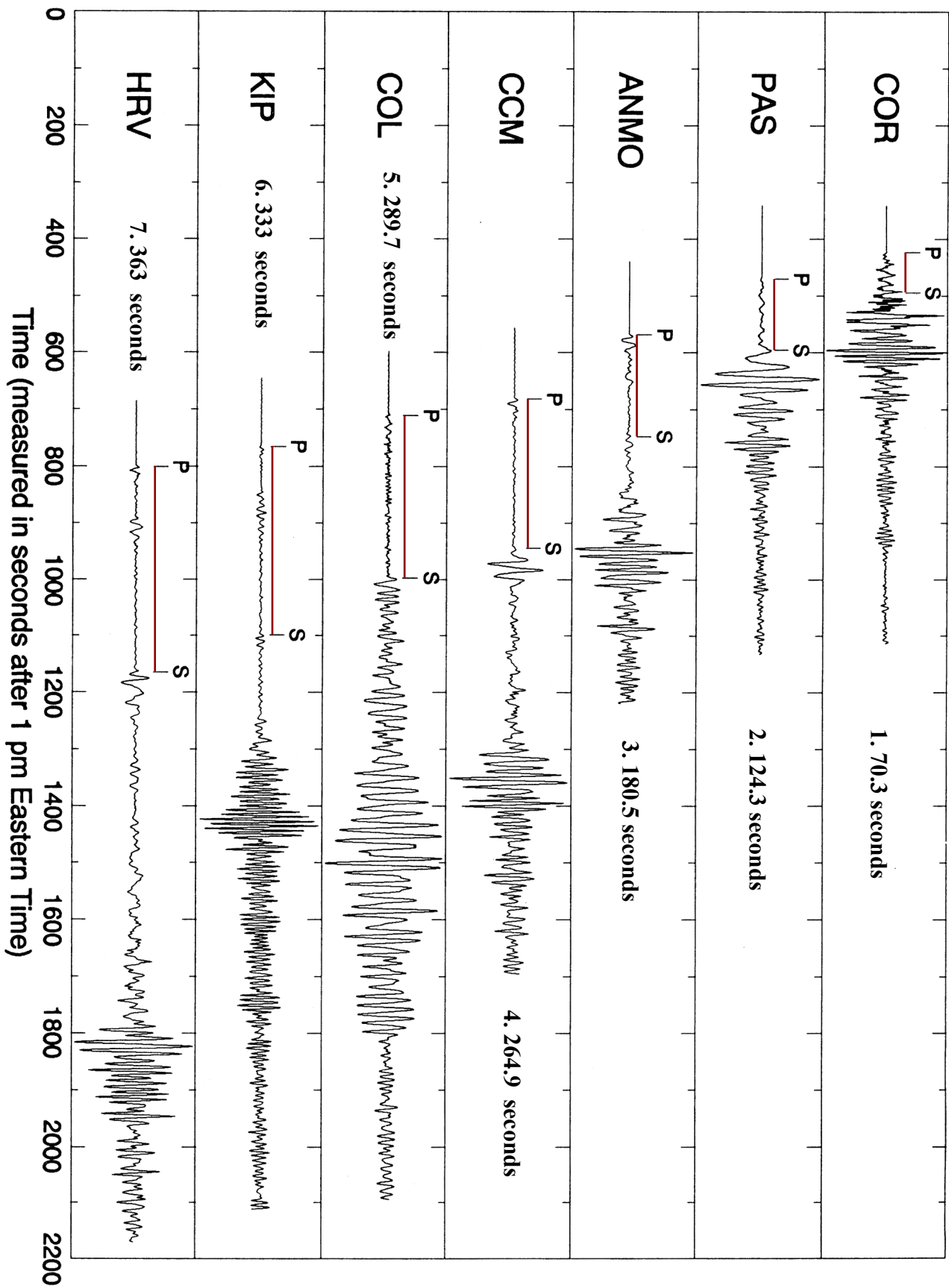
1. P - waves compress matter in their direction of propagation.
S-waves cause shear (up and down motion) in their direction of propagation.
2. P-waves > S-waves > surface waves in velocity.
3. P-waves can propagate through all 3 states of matter. S-waves are blocked by liquids and so can be used to detect any layers within the earth that are liquid (i.e. the outer core).
4. The focus is the source of an earthquake below the surface. The epicenter is the point on the surface directly above the focus.
5. Take the S-P time interval and scale it between the P-curve and the S-curve and then drop straight down to get the distance from the seismic station to the epicenter of an earthquake.
6. Take 3 S-P time intervals and get 3 distances from 3 separate seismic stations. Use those distances as the radii of three circles drawn around the three seismic stations. The epicenter is the point where the three circles intersect.
7. Using this equation: $M = \log_{10}A + 0.83\log_{10}D + 0.00027D + 1.76$

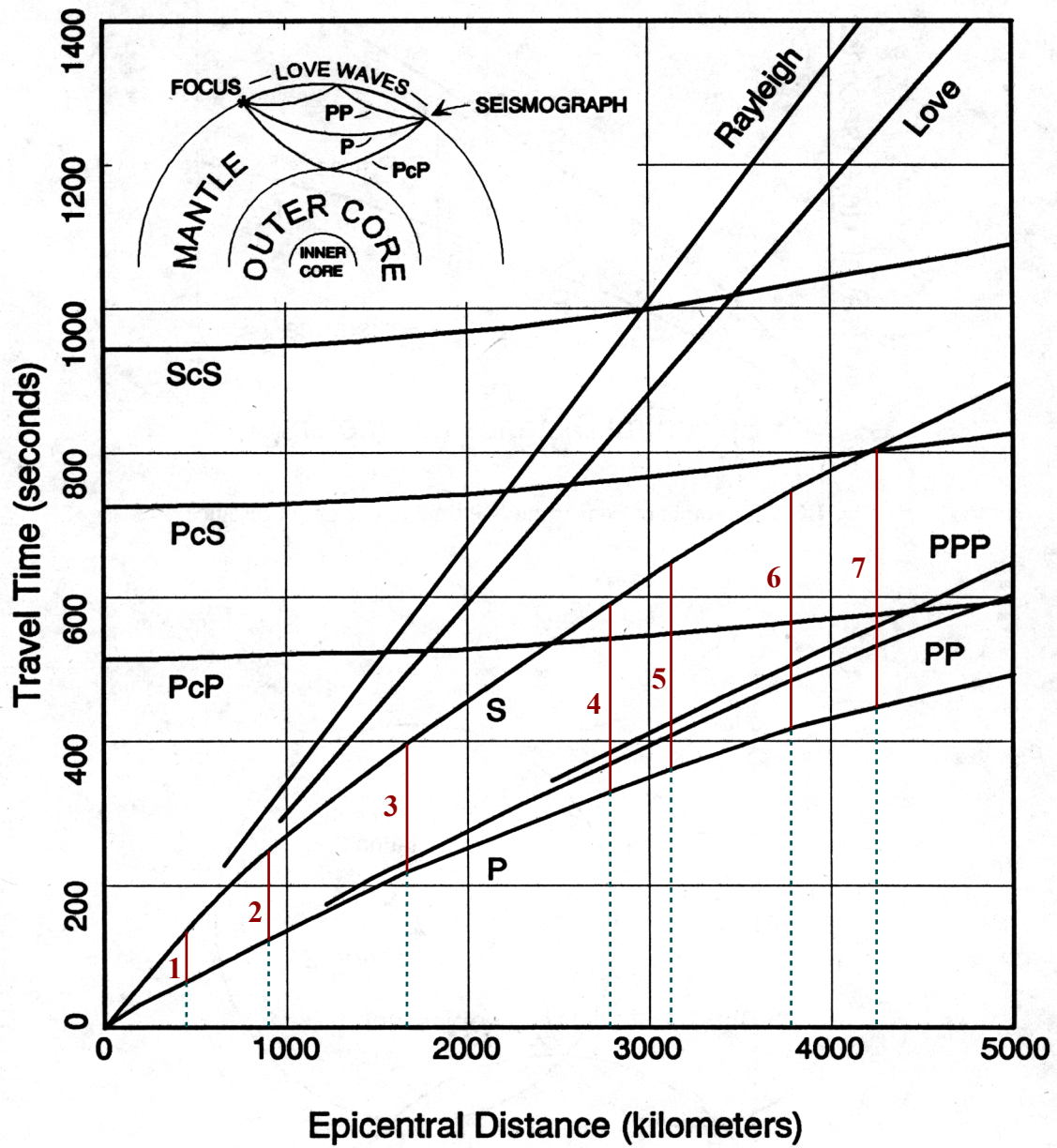
 $M = \log_{10}(8000) + 0.83\log_{10}(100) + 0.00027(100) + 1.76$

 $M = 3.903 + 1.66 + 0.027 + 1.76 = \mathbf{7.35}$
8. Using this equation: $M = \log_{10}A + 2.56\log_{10}D - 1.67$

The Amplitude (A) from Fig. 9, page 8 = 4 micrometers

 $M = \log_{10}(4) + 2.56\log_{10}(500) - 1.67 = 0.602 + 6.909 - 1.67 = \mathbf{5.84}$
9. Because California's crust is badly fractured and much of it does not have an average granite rock composition, which the rest of the continent has.
10. See the North America MAP.





- 1. COR = 455 km
- 2. PAS = 906 km
- 3. ANMO = 1672 km
- 4. CCM = 2809 km
- 5. COL = 3140 km
- 6. KIP = 3809 km
- 7. HRV = 4290 km

