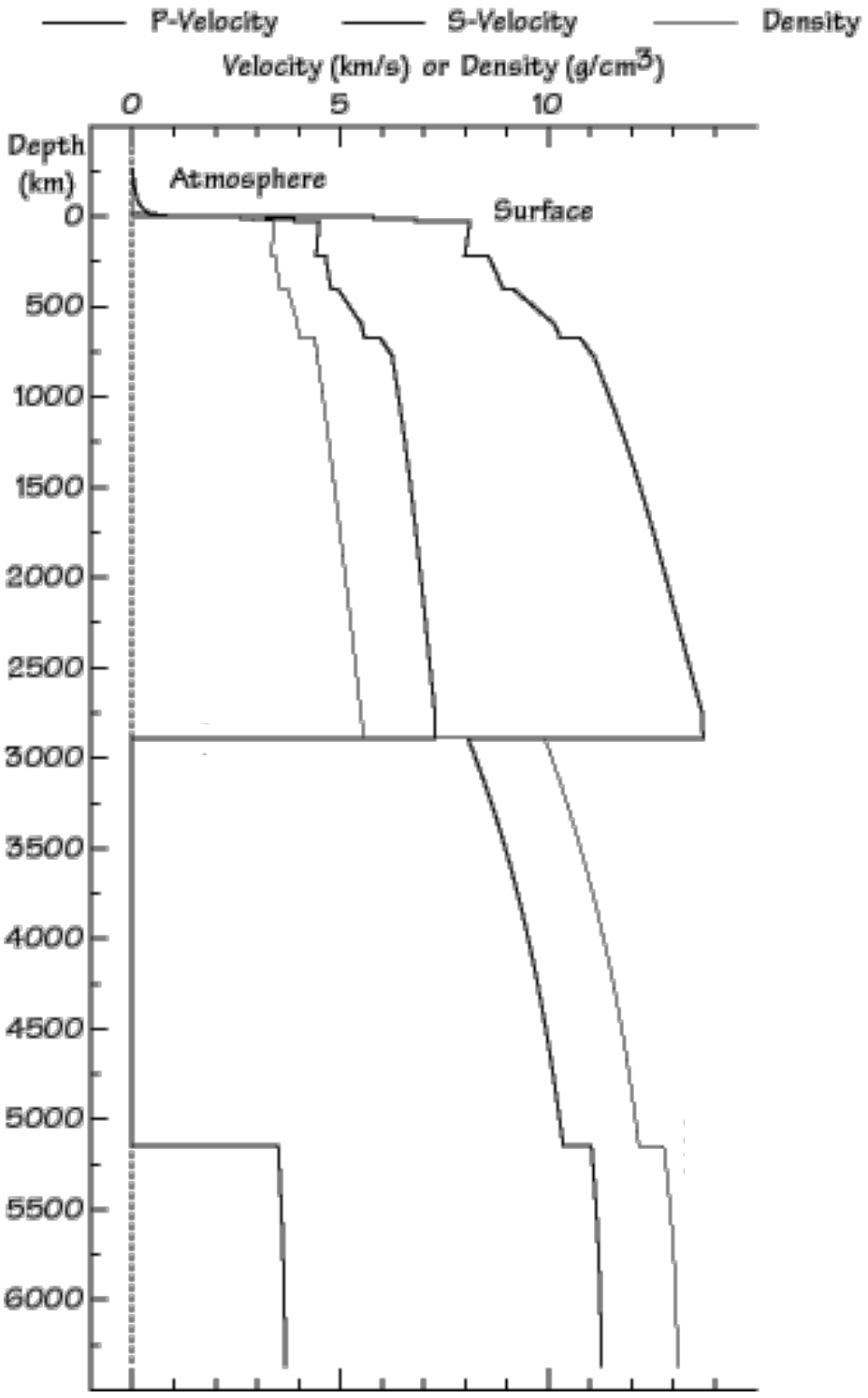
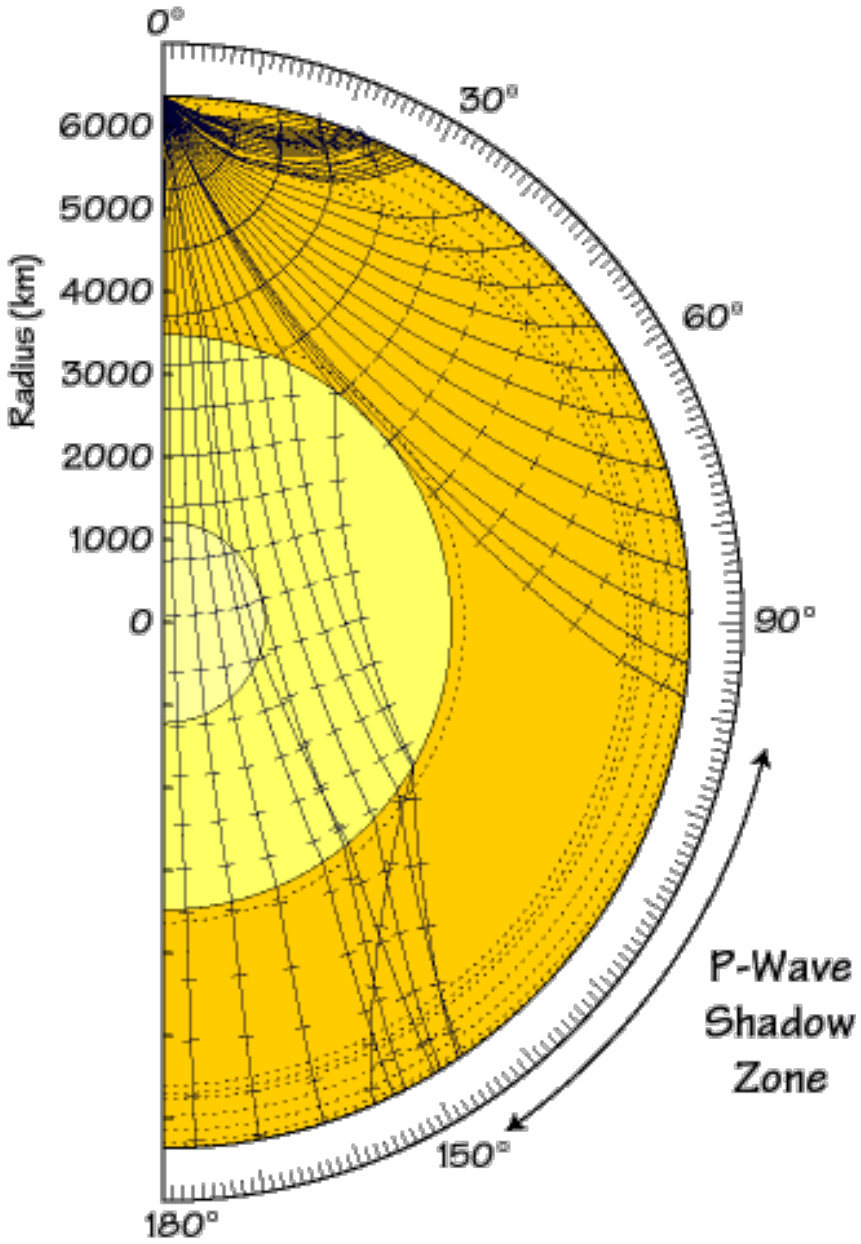


1. For every abrupt change in wave speed, this means that there is a change in phase (solid, liquid, gas). Waves travel faster in solids than liquids, and they travel even slower in gases. These abrupt changes can help indicate where the different “Layers” of earth are. Mark out each layer on this graph with a horizontal line, and label the different layers.

2. What is the approximate depth of each layer? List the layer and depth.

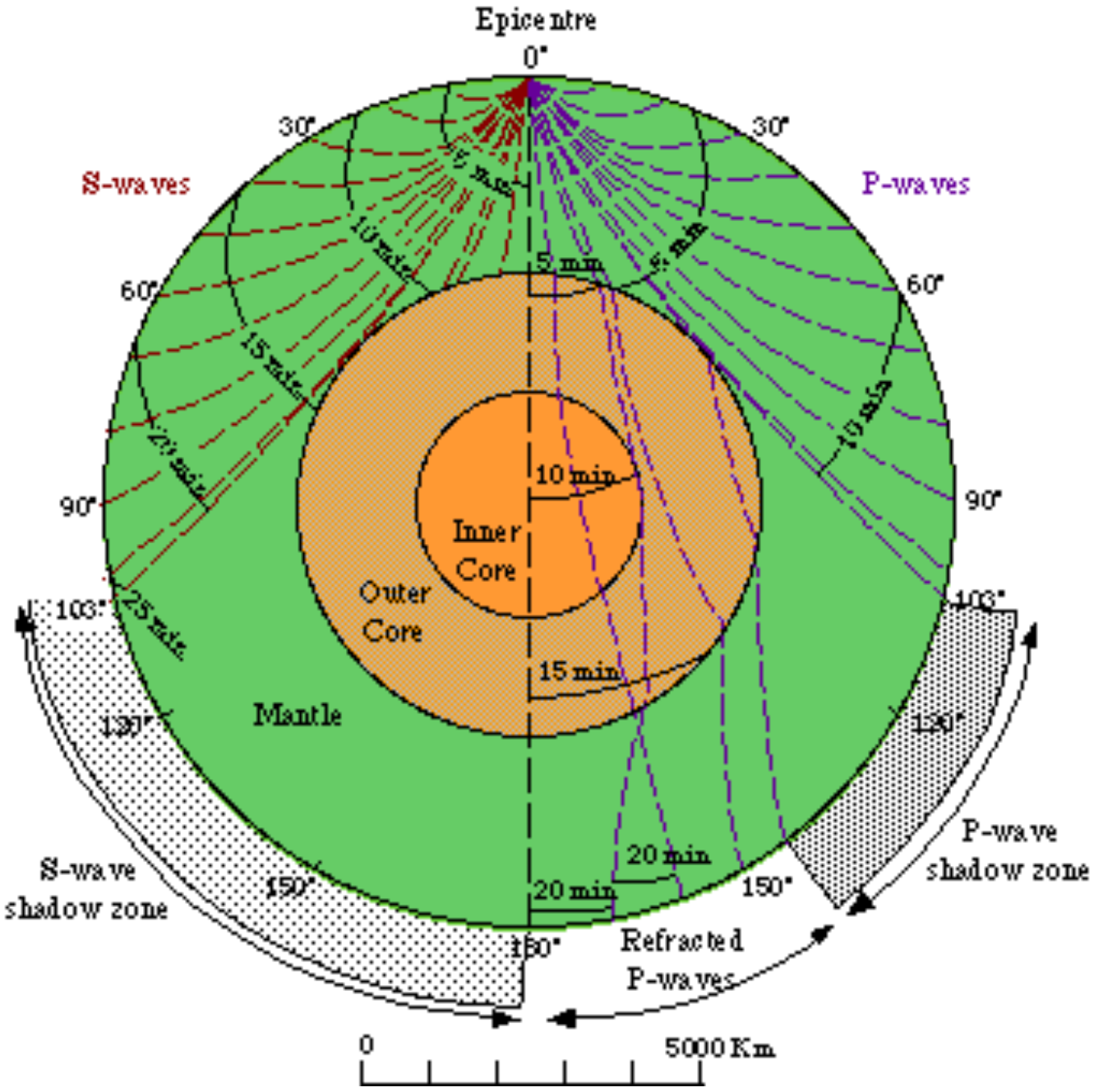
3. Explain why the S wave velocity appears to decrease to zero suddenly around 2800 km.



(Lines show path of P-wave. Dashed lines show regions with abrupt velocity changes. Each dash across a P-wave's path marks a one-minute interval.)

For each P wave, follow its path and determine how long it takes to get to its end location. Write the time next to its endpoint. Do you notice anything strange about the pattern of times?

What happens when a wave reaches a new layer?



Compare the shadow zones of the P-waves and the shadow zone for S-waves. Why does each one exist? Explain why their sizes differ.

Diagram 1 below represents a cross section of Earth and its interior layers. The asterisk (✱) shows the location of an earthquake epicenter. Letters *A* through *D* are seismic stations on Earth's surface.

Diagram 2 shows four seismograms labeled *I*, *II*, *III*, and *IV*, which were recorded at seismic stations *A*, *B*, *C*, and *D* during the same time interval.

Diagram 1

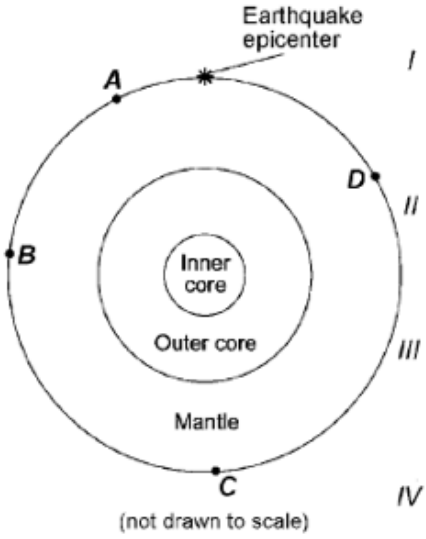
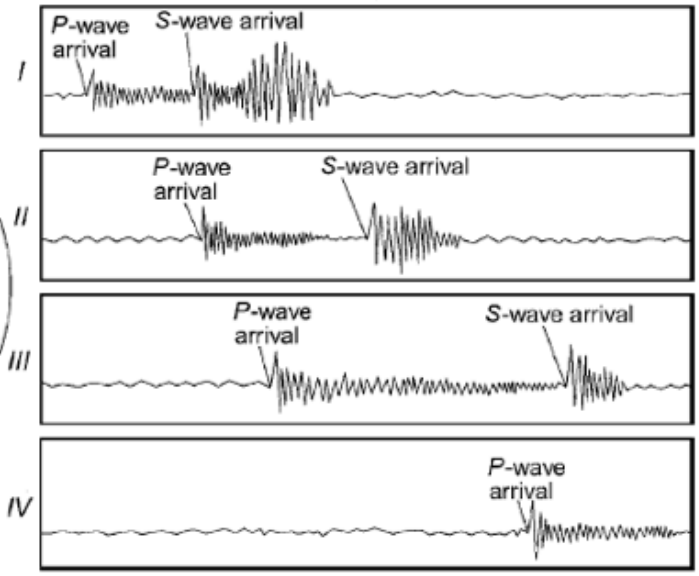


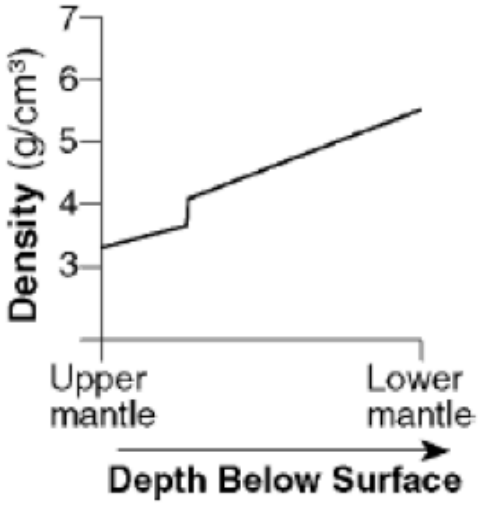
Diagram 2



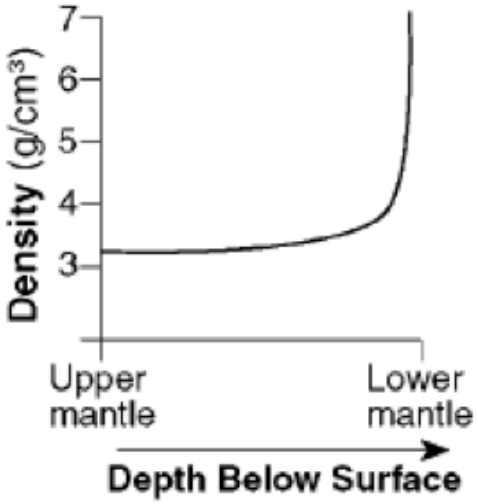
Using diagrams 1 and 2, determine with seismograms (I, II, III, or IV) were made at which station (A, B, C, D). Explain your reasoning.

Which graph *best* shows the inferred density of Earth's interior as depth increases from the upper mantle to the lower mantle?

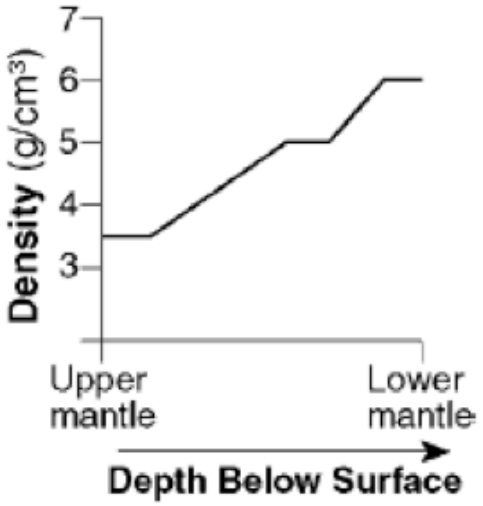
A)



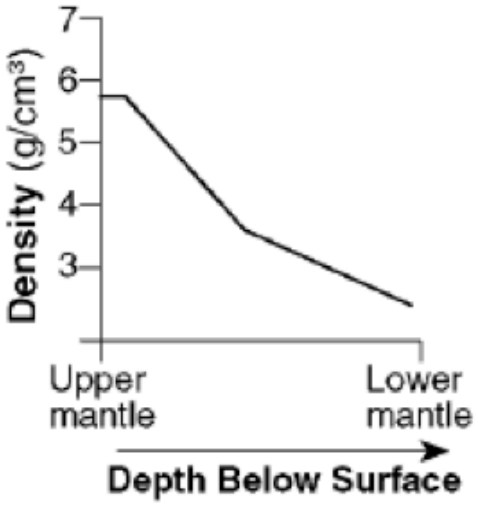
C)



B)



D)



When seismic waves reach different seismic stations that are VERY close to one another, sometimes they show the waves haven't gone in a smooth pattern (because they haven't arrived at the same time). If they appear in this irregular pattern, what might this show about the different layers of earth's interior? (HINT: How would they be bent in irregular patterns?)