

**Seismic Waves Animation Activity**

Name: \_\_\_\_\_ Period: \_\_\_\_\_ Date: \_\_\_\_\_

**Purpose:** To understand how geophysics can be used to investigate the internal layers of the Earth.**Materials:** Computer and Seismic Waves Animation**Procedure**

1. Open the Seismic Waves Animation on your classroom computer.
2. Turn the sound down so that you don't annoy others around you.
3. Press "START."
4. Select "Northridge January 17, 1994" and then click "Go."
5. Give a basic summary of what happened in the Northridge Earthquake.
  
6. Click on Options and then select Phases. Make sure all check boxes are turned on and that all phases show on cross section.
7. Start the earthquake. Move through the simulation by pausing or advancing as necessary.
8. How do P waves behave in a solid? In a liquid?
  
9. How do S waves behave in a solid? In a liquid?
  
10. Watch what happens as P waves (red) make their way from the Mantle in to the Outer Core. Tell me what happens to them. Do they reflect, refract, and/or keep going when they get to the Outer Core? If they keep going, what happens to their speed? What does this tell you the Outer Core is made of?
  
11. Watch what happens as S waves (blue) make their way from the Mantle to the Outer Core. Tell me what happens to them. Do they reflect, refract, and/or keep going when they get to the Outer Core? Tell me what happens to their energy if energy can neither be created nor destroyed. What does this tell you the Outer Core is made of?
  
12. Continue to watch the P wave as it makes its way from the Outer Core to the Inner Core. What happens to its speed? What does this tell us the Inner Core is made of?

13. Draw a cross section of the Earth showing all of its layers. Tell me whether each one is a solid or a liquid and HOW you know based on the seismic earthquake waves simulation.

14. Advance the P waves enough so that you can see their division as they go through the Outer Core and then back in to the Mantle. Draw a cross section of the layers showing the waves fronts and then show me where the P Wave Shadow Zone might be. What is a P Wave Shadow Zone?

15. How can the P wave shadow zone tell us about the size of Earth's Outer Core?

16. Why is the S wave shadow zone so much larger than the P wave shadow zone? Draw a cross section and define the size of the S wave shadow zone.

17. Summarize for me how we use geophysics and earthquake waves to know the layers and compositions inside of the Earth. This should be no less than a half page of writing. You'll be asked to do the same thing on the test. Staple this to this sheet.