

# OKLAHOMA ROCKS!

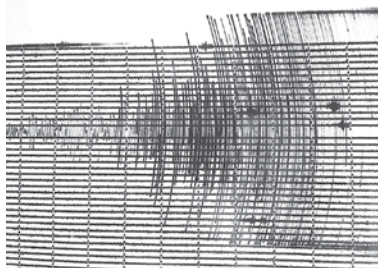
## shake, RATTLE & ROLL

### Earthquake Analysis

The when, where, type, and strength of an earthquake has to be figured out by specialists known as seismic analysts. When an earthquake occurs, seismometers – the mechanical ‘ears’ buried just a few feet underground, all over the state – measure the vibrations. These measurements are sent by cell phone modem to the Oklahoma Geological Survey Seismic Lab. There, seismic analysts scan through the vibration measurements, or waveforms, and pick the times at which different parts of the earthquake vibration occurred. The p wave (the bump or bang sometimes felt or heard when experiencing an earthquake) is the initial wave, and the s wave (the rolling, sustained vibration sometimes felt during an earthquake) is the secondary wave. By precisely determining when each of these vibration types occurred at multiple seismometers, the precise location and depth of the earthquake origin is triangulated. By determining which direction the p wave first moves (up or down) at enough stations, the precise fault movement can be determined.



<https://commons.wikimedia.org/wiki/File:Seismometer-iceland.JPG>  
Author Heidi Soosalu 7-9-12



[https://commons.wikimedia.org/wiki/File:2014\\_American\\_Canyon\\_earthquake\\_seismometer.jpg](https://commons.wikimedia.org/wiki/File:2014_American_Canyon_earthquake_seismometer.jpg) Author: DarTar 11-21-14

### Materials Needed:

- Dominoes
- Tape
- Hard surface (desk or table)

Line up a row of Dominoes on a hard surface (desk or table) so that they are close enough to knock each other over (as we've probably all done or at least seen before). When the end Domino is knocked over and pushes into its neighbor, and then that Domino pushes into its neighbor, this demonstrates how energy is transferred in a p wave.

To view an s wave with Dominoes, you'll have to connect each Domino in the row with its neighbor with tape. Run a length of tape along both sides of the row, so that tape is stuck to the edge of each Domino. Now have someone hold one end of the row, and have another person quickly move the other end of the row from side to side without shortening or lengthening the row. The continuation of the side to side motion along the length of the row is another demonstration of how s waves transfer energy.