



**CALIFORNIA STATE SCIENCE FAIR  
2003 PROJECT SUMMARY**

<b>Name(s)</b> <b>Aaron John Mendonsa</b>	<b>Project Number</b> <b>J0224</b>
<b>Project Title</b> <b>Seismometers: Earthquake Detection Devices</b>	
<b>Abstract</b>	
<b>Objectives/Goals</b> Problem Statement: Which seismometer is the most responsive and sensitive? The Lehman or the Earth Movement Sensor?	
<b>Methods/Materials</b> Materials: <ul style="list-style-type: none"><li>· Base: 3/4" plywood approx 12" x 18".</li><li>· Pendulum Rod 1/2 " threaded rod, ~24" long..</li><li>· Support Wire Light steel guitar string</li><li>· Horseshoe Magnet</li><li>· Single Pole Magnet</li><li>· Frame A upside down U made of 1" black pipe</li></ul> Procedures: The Lehman Seismometer <ul style="list-style-type: none"><li>· After built, pour one quart of damping oil in the vertical and horizontal damping paddles.</li><li>· Make sure the pendulum is centered to receive more accurate readings.</li><li>· Next, connect the voltage cables to the pickup coil in the originated spots.</li><li>· Next, adjust the ohmmeter to the required voltage to get appropriate readings.</li><li>· Adjust the chart recorder to the center point.</li><li>· Take readings for ten to fifteen minutes.</li></ul>	
<b>Results</b> Forty trials were conducted on both the Lehman and the Earth Movement Sensor devices and the data was represented in a graphical format. The line graph data readings from the Lehman device are far more sensitive and of greater magnitude with differentiated magnetic current values. In contrast, the data from the EMS device, indicates a lower magnitude in terms of magnetic current and does not provide much difference in value. This indicates that the changing magnetic field caused by the bipolar magnet moving over the pickup coil is not sensitive enough to produce very accurate data. On observing the bar graph, the Lehman device is far more active in comparison to the EMS device.	
<b>Conclusions/Discussion</b> This was an extremely good way to experiment with seismology. In conclusion, the Lehman was more responsive and sensitive than the EMS. This was because the Lehman was much better designed and has a stronger magnet.	
<b>Summary Statement</b> To learn and understand how seismometers work and to test the sensitivity to two seismometers.	
<b>Help Received</b> Dad helped with building; and sister took the readings.	