



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) Alex T. Jones	Project Number J0612
Project Title Does the Amplitude of a Wave Proportionally Affect Its Energy?	
Abstract Objectives/Goals The purpose of my project was to determine if the energy contained in waves is proportional to the wave's size (amplitude). Methods/Materials To test my hypothesis I built a two-piece force/displacement test machine. The first piece is a hollow cylinder (tank) open on the bottom, closed on the top, with track guides attached around the outside. The second piece is a vertical track that supports the tank and weights and allows the tank to remain perfectly straight so it can slide up and down with little friction. This track support consists of a base box made of wood, with three stainless steel poles mounted vertically from the base and parallel to each other. A wooden lid keeps the poles spaced and holds the machine together at the top. To collect data I put individual weights on the top of the tank, this represents the energy in a wave, and measured how far the tank moved down, this represents the wave's amplitude. Results After I collected my data and converted the weight to Newtons and the height to displacement, I graphed my data on a line graph, and I discovered that my graph's line was almost perfectly straight (by linear regression). Conclusions/Discussion Based on my graph, I can safely say that a wave's amplitude is directly proportional to its energy and that a larger wave has equal energy proportionally to a smaller wave.	
Summary Statement My project is designed to find out whether large waves create more or less energy proportionally than small waves.	
Help Received Step-Father helped me build test machine; Father helped with display board; Mother took photos of testing.	