CALIFORNIA STATE SCIENCE FAIR
2013 PROJECT SUMMARY

Name(s)
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Project Number
J1822

Project Title
Wire on Ice

Abstract

Objectives/Goals
My objective was to learn if wire could move through ice without cutting it in half, and how weight, material and size of wire, vibration and temperature influence this process.

Methods/Materials
The project consisted of eight experiments which used different types of wire, three steel wires, varying in widths, a nylon wire and a vibrating steel wire. In each experiment up to two wires at the same time were suspended from the ice block and two weights were hung on each end of the wire, these weights varied by experiment. The experiments were conducted with two different surrounding temperatures.

Results
I found out that skinner wire moves through the ice faster than thicker wire because it covers less surface area and therefore there is more pressure on that surface area. Higher temperature and greater pressure speeded up the progress of the wire. Steel wires moved through the ice faster than the nylon wire because steel is a good conductor of heat and nylon is a poor conductor of heat. Lastly, vibrating wires moved twice as fast as the static wire. The wire does not cut the ice in half, because of regelation, melting ice under pressure and resolidifying or in this case refreezing when the pressure is released.

Conclusions/Discussion
In all, I learned many interesting facts, for example regelation also occurs while ice skating and underneath glaciers.This project intrigued me to investigate farther and to learn more, for example I could add more weight at a below freezing state, or add vibration at below freezing, and different materials, like nano wire.

Summary Statement
How wire moves through ice and what would influence this process.

Help Received
Dad helped with graphs.