



**CALIFORNIA STATE SCIENCE FAIR  
2004 PROJECT SUMMARY**

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| <b>Name(s)</b><br><b>Leandra A. Fraser</b>   | <b>Project Number</b><br><b>J1515</b> |
| <b>Project Title</b><br><b>How Low Can It Go?</b>  |                                       |
| <b>Abstract</b>  |                                       |
| <b>Objectives/Goals</b><br>For my project, I was trying to test whether or not water pressure has an affect on magnetism. My method is stated below. I compared salt water to tap water and did each test with each water five times. I wanted to also see how many paperclips the magnet would hold at each level of water.   |                                       |
| <b>Methods/Materials</b><br>Hand made cylinder (plastic tubing, plastic circular piece, cement; meter stick tape etc.); salt water; tap water; 100 jumbo paperclips; bar magnet; string; recording materials.<br><br>I created a large graduated cylinder out of 180cm of plastic tubing and marked increments from 18cm all the way to 180cm. I got salt water from the ocean and filled the cylinder to a certain amount. Then, I submerged a clump of paperclips; dropped in a bar magnet tied to a string; and tried to pick up the clump. If the magnet could not hold the clump, I would take away a few paperclips. If it could hold the clump, I would add more paperclips until I found the exact number of paperclips the magnet was able to hold. I repeated this test at each increment and did it five times for more valid results. I also performed this test five times in tap water for comparison. |                                       |
| <b>Results</b><br>I performed five tests with the salt water and five tests with the tap water. I took the averages of each increment of water for each test. The averages were as follows for the salt water: 180cm-36.6pc; 162cm-68pc 144cm-46.4pc; 126cm-50.6pc; 108cm-58pc; 90cm-62.6pc; 72cm-65.4pc; 54cm-68.4pc; 36cm-69.4pc; 18cm-72.<br>Averages for the tap water were as follows: 180cm-35.2pc; 162cm-36pc; 144cm-42.6pc; 126cm-48pc; 108cm-56.8; 90cm-60.4; 72cm-63.8; 54cm-66; 36cm-67.2; 18cm-69.   |                                       |
| <b>Conclusions/Discussion</b><br>I thought the two factors (magnetism and water pressure) would vary inversely; meaning, as the water pressure increases, magnetism decreases (weakens). I was correct. My tests showed that at the greater levels of water, the magnet was not able to hold as many paperclips. Between the salt and tap water tests, I thought the salt water would be able to hold more paperclips than the tap water because things in salt water are more buoyant, possibly making it easier for the magnet to hold more paperclips. I was correct with this hypothesis as well.  |                                       |
| <b>Summary Statement</b><br>I tested to see if greater water pressure weakens magnetism.   |                                       |
| <b>Help Received</b><br>My mother and father helped with transportation and purchasing materials; Mr. Miller, a science teacher at Vista Heights, helped me to improve my project.   |                                       |