



**CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY**

Name(s) Nicholas A. Manning	Project Number J0116
Project Title Go With The Flow: The Hydrodynamics of Boat Hulls	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective is to determine which boat design is most hydrodynamic.</p> <p>Methods/Materials Eight wood blocks served as boats. With them I did three different tests: bow testing, stern testing (I used the same boat I used for bow testing but turned them around), and weight testing. In bow and stern tests, I adjusted the weighting of the boats so that they all had the same weight. I used four - eight foot half pipes filled with water for my boats to float down. I attached a string to the eye screw at the bow or stern of each boat. The string was connected to a washer used as a weight to pull the boats down the trough. The weights were dropped off a crossbar at the end of the troughs. The troughs were nine feet off the ground so I could use gravity to pull the weights that pulled the boats.</p> <p>Results In the bow test, the overall fastest boat was boat #2 which had a rounded design. In the stern testing, boat # 1 was the fastest. It had a square stern design. In weight testing, boat # 1 was the fastest. It was the lightest of the weighted boats.</p> <p>Conclusions/Discussion During my bow and stern testing I discovered that density became a variable in my experiment and caused the boats that had more area cut away when they were shaped, to sink lower in the water and one to drag on the bottom. This proved my hypothesis incorrect. In weight testing though, my hypothesis was proved correct and the lightest boat moved the fastest.</p>	
Summary Statement My project was to determine the fastest boat hull design and whether weight effected boat speed.	
Help Received My mother edited my report. My father helped use heavy machinery to construct my testing apparatus. My father helped in the testing and my mother took pictures of the testing. My science teacher suggested materials.	