



**CALIFORNIA STATE SCIENCE FAIR
2011 PROJECT SUMMARY**

Name(s) Alec English; Will Renken	Project Number J0106
Project Title Turbulent Torpedoes	
Abstract Objectives/Goals The purpose of this project was to determine if the shape of a torpedo's nose affected the speed and amount of drag that torpedo had. It was predicted that the hemisphere-nose torpedo would be the fastest, and therefore, have the least amount of drag. Methods/Materials Five torpedoes of different nose shape but identical surface areas were constructed out of Styrofoam cylinders. The five shapes were a hemisphere nose, and long-cone nose, a short-cone nose, a flat nose, and a mushroom nose. The torpedoes were covered with shrink coat to seal their surfaces. The torpedoes had lead placed in their interiors to make their buoyancy neutral in water. Results The torpedo with the long cone shaped nose was consistently the fastest torpedo. The mushroom shaped torpedo was consistently the slowest. Conclusions/Discussion The conclusion is that nose shape does affect the speed of the torpedo. The hemisphere shaped nose was the third fastest torpedo. Therefore, the hypothesis, that the blue hemisphere shaped nose would be fastest, was proved incorrect. Showing that when traveling short distances long cone shaped noses reach the fastest speeds.	
Summary Statement Our project tested multiple torpedo shapes to see which was most efficient, comparing the effects of surface area, drag coefficients, and cavitation.	
Help Received Father helped obtain equipment and time experimental trials	