CALIFORNIA STATE SCIENCE FAIR
2011 PROJECT SUMMARY

Name(s)

Alec English; Will Renken

Project Number

31947

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