CALIFORNIA STATE SCIENCE FAIR
2014 PROJECT SUMMARY

Name(s)
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Project Number
J0112

Project Title
Gone with the Wind: A Study of the Lift in Certain Airfoils

Abstract

Objectives/Goals
The objective of this project was to determine if a semi-symmetrical airfoil has more lift than a flat-bottom airfoil.

Methods/Materials
Two airfoils were separately tested in a wind tunnel for ten seconds each trial. The airfoils were the same weight and were tested at the same wind speed. A scale was placed under the wind tunnel and connected to a wooden dowel on the airfoil. When the wind tunnel was turned on, the airfoil lifted and showed a negative weight on the scale, measured in grams. The highest lift registered in each trial was recorded in the logbook. There were thirty trials in all for each airfoil.

Results
The mean lift of the flat-bottom airfoil, in grams, was 31.83, while the mean lift of the semi-symmetrical airfoil was 28.17 grams.

Conclusions/Discussion
The hypothesis was proved incorrect because the mean lift of the flat-bottom airfoil was 3.66 grams more than the mean lift of the semi-symmetrical airfoil. This information proves if you have a situation where more lift is needed, it would be better to use flat-bottom airfoils instead of semi-symmetrical airfoils.

Summary Statement
The focus of this project was about determining how changes in airfoil shape effect the amount of lift in each airfoil.

Help Received
Father helped supervise power tool use and helped with building the wind tunnel.