CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY

Name(s)
Blake H. Bainou

Project Number
J0101

Project Title
How High Can She Fly?

Abstract

Objectives/Goals
My science project, "How High Can She Fly?",involves testing,reengineered and more aerodynamic fin designs of a model rocket. The purpose of this project is to determine which fin shape would help propel its rocket altitude higher into the air, increase its speed and conserve on fuel. When N.A.S.A. launches its space shuttle, thousands of gallons of fuel needed to achieve space flight. I hypothesized, if a rocket is more aerodynamic, it will fly faster, taking less time to get into space. The faster the rocket flies, the less fuel the rocket will consume. Because rocket propulsion is by no means inexpensive, the less fuel the rocket consumes the less money N.A.S.A.will need to spend. With this information, I believe, that the experiment I developed is worth exploring further to improve the economy of scale for future space flights, speed to cover further distances into the heavens and to reduce fuel consumption.

Methods/Materials
Partial list of self-constructed items:
·2 Nova Payloader Model Rockets·Nova Payloader Reengineered Fin Design·Science Project DVD Video·Display Board·Securing Unit for Altimeter in Payload Compartment·Data Tables and Graphs·All Contents of Report and Display

Results
From my data, I concluded that Rocket A, flew to an average peak altitude of 143.49968 meters. Rocket B, with its manipulated fin variable, flew to an average peak altitdue of 297.72864 meters. Analyzing this, Rocket B flew 154.22896 meters higher than Rocket A, approximately 207.47 % higher. Think of this experiment on a larger scale. Imagine if this experiment were replicated, except with a 200 foot long rocket headed for the moon. Think how much higher and faster this rocket would go compared to Rocket A; not to mention how much propellant would be saved. This just goes to show you how aerodynamics can really make a difference.

Conclusions/Discussion
Analyzing my data, I found that my hypothesis was proven correct. The reengineered fin design propelled its rocket more than twice the height of the conventional fin shape. If I had the opportunity to expand upon my project, I would take it to the next level and make my project's significance a reality.

Summary Statement
How High Can She Fly? is a project that involves testing reengineered and more aerodynamic fin designs of a model rocket, to determine which fin shape would help propel its rocket higher into the air.

Help Received
Aside from my parents taking me to Kinkos numerous times, 100% of my project I typed, wrote, cut, constructed, paid-for, scanned, glued, printed, collected data for, etc.