



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) Robert C. Hollar	Project Number J0115
Project Title Hovercraft Design	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective of the project was to design and build a hovercraft capable of carrying a load of 10 kg (22 lbs.)</p> <p>Methods/Materials Materials: Electric Model Aircraft motor with propeller and radio controller, gel cell battery, pvc plastic sheets, abs plastic pipe, rubber adapter boot, bicycle inner tube, anemometer, hand-built manometer, and tachometer.</p> <p>Method:</p> <ol style="list-style-type: none">1) Build test apparatus using the abs pipe, manometer, and anemometer;2) Build engine assembly with motor, propeller, and rubber boot;3) Conduct design tests measuring air pressure and speed at specific combinations of motor speeds and flow constrictions;4) Tabulate and plot results of design tests;5) Design and construct a hovercraft based on the results of the design test;6) Conduct initial test flight;7) Modify hovercraft design based on initial test flight; and8) Conduct final flight test. <p>Results The design test suggested that a hovercraft with a body 52 cm in diameter would carry a load of 10 kg using the model aircraft motor and propeller. Therefore a hovercraft body was built to these specifications and tested with the design load.</p> <p>Conclusions/Discussion The hovercraft successfully lifted the design load of 10 kg. However, significant force was required to move the hovercraft horizontally. It appears that air escaping from under the hovercraft acts as a lubricant and is necessary for it to move easily. The motor could create sufficient pressure to lift the load when only a small volume of air was escaping. Better results could have been obtained if the hovercraft had not been designed near its maximum capabilities.</p>	
Summary Statement The purpose of the project was to design and build a hovercraft using engineering data.	
Help Received My father discussed various aspects of the project and supervised the testing and construction.	