



**CALIFORNIA STATE SCIENCE FAIR  
2008 PROJECT SUMMARY**

<b>Name(s)</b> <b>Taylor Bachelier; Phillip Houghton; Zachary Houghton</b>	<b>Project Number</b> <b>S0201</b>
<b>Project Title</b> <b>Can You Build a Working Ramjet in Your Garage?</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The purpose of this project was to evaluate low-speed ramjet technology to see if it is possible to build and run a low-speed ramjet efficiently, to get an idea of power to weight ratio, see how much power that would equate in full scale and determine if that is enough power to power a full scale aircraft.</p> <p><b>Methods/Materials</b></p> <ol style="list-style-type: none"><li>1. Ramjet body</li><li>2. Thrust testing cart</li><li>3. Propane delivery system</li><li>4. Air delivery system</li><li>5. Fuel ignition system</li><li>6. Digital fish scale</li><li>7. Propane tank</li></ol> <ol style="list-style-type: none"><li>1. The ramjet body is fabricated.</li><li>2. The fuel system parts are purchased and set up.</li><li>3. Thrust testing cart is built.</li><li>4. Ramjet is thrust tested with 3 different flameholders.</li></ol> <p><b>Results</b></p> <p>The 5 Point star flameholder obtained 0.19 Kg. of thrust on the first test, 0.15 Kg. on the second test, 0.35 Kg. on the third test and 0.26 Kg. on the fourth test.</p> <p>The 3 Spoke flameholder created 0.17 Kg. of thrust on the first test, 0.13 Kg. on the second test, 0.17 Kg. on the third test and 0.20 Kg. on the fourth test.</p> <p>The Drain style flameholder made 0.25 Kg. of thrust on the first test, 0.12 Kg. on the second test, 0.18 Kg. on the third test and 0.15 Kg. on the fourth test</p> <p><b>Conclusions/Discussion</b></p> <p>We proved our hypothesis we were able to create a working ramjet in our garage. Our data collection proves that our low speed ramjet is inefficient in its current state and therefore needs improvement in power to weight ratio. Also our low speed ramjet required a lot more fuel to run full throttle than we planned for.</p>	
<b>Summary Statement</b> Making a working ramjet in our garage that produces positive thrust.	
<b>Help Received</b> N/A	