



California Science Center  
**CALIFORNIA STATE SCIENCE FAIR**  
**2001 PROJECT SUMMARY**

<b>Your Name</b> (List all student names if multiple authors.) <b>Sean O Kirkpatrick</b>	<b>Science Fair Use Only</b>  <h1 style="margin: 0;">J0917</h1>
<b>Project Title</b> (Limit: 120 characters. Those beyond 120 will be ignored. See pg. 9) <b>Which Plane Flies the Longest?</b>	<b>Division</b> <u>X</u> <b>Junior (6-8)</b> _ <b>Senior (9-12)</b>
<b>Preferred Category</b> (See page 5 for descriptions.) <b>9 - Fluid Mechanics/ Aerodynamics/ Thermophysics</b>	
<b>Abstract</b> (Include Objective, Methods, Results, Conclusion. See samples on page 14.) Use no attachments. Only text inside these boxes will be used for category assignment or given to your judges.	
<p><b>Objective:</b> My project was to determine if attack angle to the horizontal affects the length of the time aloft and which of the five different types of Whitewing planes, Dolphin, Bi-plane, Tailless, Concord, or 747, will have the longest flight time.</p> <p><b>Materials and Methods:</b> The five Whitewings paper air planes the Bi-plane, Dolphin, Tailless, Concord, and 747, and the Rubber Band Catapult Launcher. The planes were launched by stretching the rubber band catapult launcher to a length of approximately 4 feet while holding them at an approximate 0 degrees wing angle to the ground. Each plane was launched at attack angles of 0, 45, and 90 degrees and launched ten times at each of the three angles. In order, each plane was launched, followed by the next at 0 degrees one time then at 45 degrees then 90 degrees. You do this 10 times to get a total of 150 flights. The planes were timed from when they were launched to when they hit the ground.</p> <p><b>Results:</b> The results were mixed and parts of my hypothesis was correct and incorrect. The experiment showed that the Dolphin had the longest time aloft of 3.91 s at the 45 degree angle. The Concord had the second longest time of 3.68 s at a 90 degree angle. The Tailless was third longest with a time of 3.49 s at a 90 degree angle.</p> <p><b>Conclusion:</b> The experiment shows that attack angle does affect flight time of Whitewings planes and this part of my hypothesis was correct. I was partially correct in hypothesizing which of the planes would have the greatest to least flight times. My results indicate that the attack angle of a plane is important in flight and that different types of planes vary in the best attack angle.</p>	
<b>Summary Statement</b> (In one sentence, state what your project is about.) My project investigated whether attack angle affects time aloft for five different Whitewings paper airplanes.	
<b>Help Received in Doing Project</b> (e.g. Mother helped type report; Neighbor helped wire board; Used lab equipment at university X under the supervision of Dr. Y; Participant in NSF Young Scholars Program) See Display Regulation #8 on page 4. My father helped me in many parts of my project.	