



**CALIFORNIA STATE SCIENCE FAIR  
2012 PROJECT SUMMARY**

<b>Name(s)</b> Nicholas J. Katzer	<b>Project Number</b> <b>J0115</b>
<b>Project Title</b> <b>The Effect of Hull Shape on a Ship's Efficiency</b>	
<b>Abstract</b> <b>Objectives/Goals</b> The goal of this project was to determine the shape of a ships hull that would provide the least drag for a given unit of the ship's volume. <b>Methods/Materials</b> 4 single hulled, 4 twin hulled and 4 triple hulled ships carved to the same scale and size parameters had their front ends tapered to varying degrees, one of each hull type with a blunt end as a control. The volume of each hull was then measured. One at a time they were then attached to a force sensor and put into a slightly inclined trough containing flowing water. The test was repeated 3 times for each hull and the force sensor results recorded. <b>Results</b> The flat faced hulls were consistently the most efficient and the single hulled ships were on average more efficient than either the twin hulled or triple hulled boats. <b>Conclusions/Discussion</b> The conclusion was that while drag plays a key role in the efficiency of a ship the volume it carries is even more important. A ship that carries more will use less fuel per unit of cargo than a ship of lesser volume.	
<b>Summary Statement</b> This project was performed in order to find the most efficient shape for a ship's hull.	
<b>Help Received</b> Father helped with power tool usage; Teacher loaned measurement equipment	