



**CALIFORNIA STATE SCIENCE FAIR  
2012 PROJECT SUMMARY**

<b>Name(s)</b> <b>Jennifer N. Zurlinden</b>	<b>Project Number</b> <b>J0130</b>
<b>Project Title</b> <b>Ducted Propeller Efficiency</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The objective is to determine if a marine propeller operating in a duct is more efficient than one without? If so, how long should the duct be to make it most efficient?</p> <p><b>Methods/Materials</b> I dropped a scale three blade propeller with four different duct lengths through a tank of water 22 inches deep and counted the number of revolutions the propeller spun on a threaded shaft. Each propeller/ duct assembly was dropped 20 times and the revolutions made by the propeller were counted to within 1/21 of a revolution.</p> <p><b>Results</b> I found that a propeller has a greater efficiency with a duct rather than without one. I also found that the longer the duct the greater the efficiency. The data for a 3 inch ducted demonstrated a 12% increase in efficiency.</p> <p><b>Conclusions/Discussion</b> My conclusion is that a propeller has a greater efficiency with a duct rather than without one. I also found that, to a point, the longer the duct the greater the efficiency.</p>	
<b>Summary Statement</b> My project is to determine if a ducted propeller is more efficient than a non-ducted propeller.	
<b>Help Received</b> Father helped me build propeller mount.	