



# CALIFORNIA STATE SCIENCE FAIR 2005 PROJECT SUMMARY

<b>Name(s)</b> <b>Connor K. Patrick</b>	<b>Project Number</b> <b>J0805</b>
<b>Project Title</b> <b>Solar Desalination</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The objective was to find out if the temperature of the water used to cool the condensation plate of a homemade solar powered desalination device affects the amount of desalinated water produced.</p> <p><b>Methods/Materials</b> A desalination device was made that would allow heated seawater to be run into an evaporation chamber with a condensation plate on top. The condensation plate would be cooled to different temperatures so it could be determined if condensation plate temperatures effect the amount of desalinated water produced. The evaporator was constructed using Plexiglas, copper and plastic tubing were used to conduct the heated salt water and direct the cooled water onto the condensation plate, a photo-voltaic cell was used to charge the battery to run the 2 bilge pumps. A solar oven was used to heat the ocean water. The salt water was heated to 60° c. Water was used to cool the condensation plate to 3 different water temperatures (5degrees c., 20 degrees c., and 34 degrees c.) Each test ran for 3 hours during which the amount of desalinated ocean water produced was measured at 30-minute intervals. Due to weather conditions, instead of a solar oven a hot plate had to be used to heat the salt water taken from the ocean for the first 6 tests. The solar oven was used in the last 2 tests to heat the salt water.</p> <p><b>Results</b> The results showed that 26.4% to 28.8% more desalinated water was produced when the condensation plate was at its coolest (0 degrees c.) than at the two higher temperatures ( approximately 20 degrees c. and 34 degrees c.)</p> <p><b>Conclusions/Discussion</b> In conclusion, the colder the condensation plate the more desalinated water is produced. This means that my hypothesis was correct. By taking cooler water from deeper levels in the ocean and using it to cool the condensation device and by using solar power to heat the salt water and to run the pumps used in a desalination system it is possible to make desalinating water more cost effective and environmentally friendly. Desalination plants exists but fuel costs to run these plants make them impractical. By 2025, scientists predict a major water crisis. New ways need to be developed to help save our water supply.</p>	
<b>Summary Statement</b> To build a complete desalination system that uses strictly solar power.	
<b>Help Received</b> Father helped in cutting the plexiglass, wood, pipes used in my experiment. He also helped me in my design and paid for the parts. Mom helped to edit and correct my typing mistakes. My brother helped me design my graphs.	