



**CALIFORNIA STATE SCIENCE FAIR
2003 PROJECT SUMMARY**

Name(s) Alysse G. Stewart	Project Number J1535
Project Title Transferring the Sun	
Abstract Objectives/Goals My project was to see which heat transfer fluid (HTF) would get the hottest. I used what I had learned in prior years solar projects to make three concentrating solar heaters exactly the same. The only difference was the liquid to be heated inside. I used salt water, olive oil, and plain water (to serve as my control). I guessed that salt water would get the hottest because salt is added to water to make it's boiling point hotter. Methods/Materials I used a shop light fixture as my solar concentrating shape. I had mirrors cut to the shape of the inside of the light fixtures and glued them in. I also glued a glass plate over each fixture to keep the wind out. The heat transfer fluids were held inside a simple copper tube cut to size. I then aimed them at the sun and took hourly temperature readings with a meat thermometer. I was careful to keep moving the solar panels to keep them tracking with the sun during the day. Results The average temperatures of the heat transfer fluids were: Salt Water 158 degrees fahrenheit; Olive Oil 153 degrees; Plain Water 149 degrees; Outside Air Temperature 70 degrees. One of my readings had the salt water at 196 degrees in the afternoon on a very sunny day and I was able to heat the solution over 88 degrees above the outside air temperature. Conclusions/Discussion My hypothesis was correct. The salt water transfer fluid got the hottest. I was surprised how hot the solutions got with my little home made concentrating solar panels. I was able to tour the solar plant in our area and learned they used a unique heat transfer fluid that reaches temperatures of over 750 degrees fahrenheit. My research found there are many ways to capture the sun's energy and that it happens naturally every day with no negative impact on the environment.	
Summary Statement My project was about trying to find out which heat transfer fluid would get the hottest while inside three identical concentrating solar panels.	
Help Received My mother glued the cut mirrors and my dad helped me with the computer input and graphs.	