



**CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY**

Name(s) Sarkis Bornazyan	Project Number J0802
Project Title Solar Energy Trap	
Abstract Objectives/Goals My project is to determine if the solar energy can be trapped for our future needs. Based on my research, it was hypothesized that if a vertical salinity gradient layer is created in a body of water, isolated with fresh water layer from the top, the density increasing with the depth, and the lamplight exposure time of the water surface progressing, then the temperature of the bottom high density layer will increase and exceed that of the top layer by trapping thermal energy. Methods/Materials A vertical salinity gradient and no salinity gradient (the control) cases, created in a container, were experimented, each in three different trials. In both cases the container was exposed to halogen lamplight. The temperature of the bottom and top layers of each case was measured as a function of the light exposure time. The mean differences in temperature between the bottom and top were calculated and the results were compared between the two cases. Results In the salinity gradient case, the temperature of the bottom layer exceeded the top by at least 5 °C, while in the no salinity gradient case the bottom did not exceed the top. Conclusions/Discussion In the vertical salinity gradient case thermal energy was trapped in the bottom layer, since there was no convection in the gradient layer. In the no salinity gradient case the bottom layer could not trap energy, because the entire structure was convective. The data fully supported the hypothesis. These findings agreed with the information found in the literature and the El Paso Solar Pond research project results. Hence, this project suggests that the renewable energy source such as solar, can be effectively stored in the solar pond-like conditions for our future needs.	
Summary Statement By creating middle insulating salinity gradient layer in a body of water, it was shown that the solar energy could be trapped in the bottom high-density layer for future needs.	
Help Received Consulting; Transportation to obtain necessary materials and literature.	