



**CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY**

Name(s) Samuel C. Spevack	Project Number S0615
Project Title Analysis of a Potential Impact Crater in the Sacramento Basin	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals In 2004, ABA Energy noted a circular feature in their analysis of a 3-D seismic dataset in the Sacramento basin. The analyst's objective was to determine whether this feature is a meteor impact crater by mapping it with seismic and well data and possibly determines the age, type of impact crater and the nature of the impact.</p> <p>Methods/Materials The analyst used a seismic workstation to map four horizons or seismic events. Several hundred two-dimensional seismic profiles were interpreted for each horizon in this process. Depth maps and then isopach maps were then made between the top horizon and all the other horizons. From these the analyst was able to measure the dimensions of the potential impact crater. The analyst also used a cross section of well logs in the potential crater area to help confirm some of these dimensions.</p> <p>Results The maps showed a feature with a lot of similarity to an impact crater - a broad shallow circular depression with associated circular structures and a central high or uplift. It is a slightly elliptical circular feature with a diameter of approximately 5,100 meters (northeast - southwest) to 5,800 meters (northwest - southeast). The circularity of this feature matches well with the circularity of known lunar and terrestrial impact craters. The maximum thickness of the potential crater fill is 80 meters. This feature is buried at depths between 1,600 and 1,490 meters below sea level and appears to be middle to late Eocene in age.</p> <p>Conclusions/Discussion The analyst compared the characteristics of this feature to geologic features other than impacts that could cause the creation of circular patterns and was able to eliminate all of these as possible alternatives to this feature being an impact crater. The size of the likely crater, complex structure of beds under the feature (including a central high) makes this a complex rather than a simple crater. The analyst recommends a future project be conducted, studying samples from any wells in the area for physical or chemical evidence of the impact.</p>	
Summary Statement This project was an analysis of a potential meteor impact crater using 3D seismic and well log data.	
Help Received ABA Energy provided computer equipment, software and access to seismic and well data. Members of ABA Energy and Dr. Raymond Sullivan provided help in the correlation of well logs to the seismic data	