



**CALIFORNIA SCIENCE & ENGINEERING FAIR
2018 PROJECT SUMMARY**

Name(s) Spencer A. Krock	Project Number S0314
Project Title Proof of Concept Modeling of Venus Atmospheric Maneuverable Platform Utilizing Earth-Bound Modeling	
Abstract Objectives/Goals The goal of the project was to compare how a physical model of the Venus Atmospheric Maneuverable Platform responds in Earth's atmosphere when filled with air or helium. The hypothesis of the study is that while the aircraft's inflatable wing structure is filled with air, the plane will not exhibit characteristics of flight, but if the wings are filled with helium, then the aircraft will glide. Methods/Materials The model was made by using Mylar balloon material to make the wings the desired shapes. The fuselage of a foam glider was used for the fuselage of the model, and a remote control helicopter was deconstructed to serve as the propulsion system for the model. Results During experimentation, it became immediately evident that the helium was positively impacting the way the plane flew above and beyond the air-filled model. The data supports the hypothesis, demonstrating that in tests of average flight time and flight speed, the helium-filled aircraft showed greater characteristics of flight and potential for long term sustained flight. Conclusions/Discussion It was determined that the scale model is not yet ready to be compared to the commercial design for VAMP. However, the data supports the hypothesis, demonstrating that in tests of average flight time and flight speed, the helium-filled aircraft showed greater characteristics of flight and potential for long term sustained flight. With modifications to the model, the model could be used to analyze the VAMP to improve the design.	
Summary Statement By constructing the first hybrid scale model of the Venus Atmospheric Maneuverable Platform, I have identified variables that need to be explored further for improvement in the design.	
Help Received I constructed the model myself, but consulted with Mr. Daniel Sokol from Northrop Grumman for advice on the project. My father, Dr. Kevin Krock, also assisted in helping select the ideal materials for the model construction.	