



**CALIFORNIA STATE SCIENCE FAIR  
2011 PROJECT SUMMARY**

<b>Name(s)</b> <b>Laura Leyva; Joana Perdomo; Angelica Saavedra</b>	<b>Project Number</b> <b>S0313</b>
<b>Project Title</b> <b>RC Surveillance Vehicle</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> Our objective was to design and build a helium-filled RC blimp that could carry a payload of a minimum of two pounds and record a clear video.</p> <p><b>Methods/Materials</b> To enhance speed and endurance we chose to use Mylar for the blimp material because it is light weight and inexpensive. Through testing, an ellipsoid proved to be the best shape in comparison to a cube and sphere because of its aerodynamic qualities and maneuverability. In order to control the blimp, we used two ducted fans, three servo motors, three batteries, two speed controllers, a wireless video camera, and the receiver for the remote control. We programmed the six channel remote control to operate the electronics. All the electronics were stored in a Styrofoam gondola. To view the images from the camera, a receiver is connected to a television.</p> <p><b>Results</b> We performed a wind tunnel experiment to test which shape (cube, sphere, ellipsoid) was the most aerodynamic. After concluding that an ellipsoid was the best choice we began to construct our blimp. Through trial and error, our group made several significant findings. One of the significant findings we made was that tape is a better sealant than glue because it prevented helium from escaping the blimp and was easier to use. We also found that we had to consider the total voltage and current that the electronics could resist. We took into account the power of the motors to make sure it gave the blimp enough thrust to fly. This all contributed to the completion of the airship.</p> <p><b>Conclusions/Discussion</b> The final product is an RC airship that can record a video 30 ft. away from the receiver and that can fly 250 ft. away from the remote control. The ship and camera can be maneuvered to turn left, right, up and down and the ship can sustain the helium for 2-4 hours. With further research and development, this project can be scaled up to a something professional engineers could work on to create a similar blimp. This would allow them to aid in reconstructing areas that have been destroyed.</p>	
<b>Summary Statement</b> We designed and built a helium-filled RC surveillance airship that could aid in a disaster relief zone.	
<b>Help Received</b> Used lab equipment at school under the supervision of Mr. Rivas; Ms. Lee, Pre-calculus teacher, tried to help with the equations.	