High Altitude Launch Opportunity (HALO) II

The Wisconsin Space Grant Balloon Launch Team began its annual duties in the 2009-2010 season by participating in the High Altitude Launch Opportunity (HALO II) project this spring. The HALO II project consisted of the simultaneous launching of 15 high altitude balloons from 15 universities in 9 different states. The purpose of the HALO II launch was to set up a high altitude communications network along with collecting temperature, humidity, pressure, altitude, CO_2, rate, and radiation data. By having each payload transmit a radio frequency, the different balloons were able to link together and pass on data. Taylor University in Indiana served as the mission control for the project and through the communications network created could receive data in real time, thus eliminating the necessity for recovery of the balloon.

Our experience with the HALO II launch went well and was a good starting point for the rest of the season. We were able to experience some of the basic procedures such as caring for and filling the balloon and practicing with the software and the payload unit that was sent to us from StratoStar Systems. While the procedures of the launch and actually launching the balloon went well, tracking and recovering the balloon was a different story. Up to about half way through the balloons flight, the tracking software was working well and was transmitting GPS points back to our software. However, shortly after the balloon reached approximately 100,000 feet, we stopped receiving GPS and data packages. After driving around for about four hours trying to pick up the dog collar transmitters signal on the payload, our team was forced to abort the recovery mission.

A few weeks ago our team contacted Jason Krueger from StratoStar to try and figure out the reason for the GPS failure. His conclusion was that the payloads aerodynamic design caused it to twist and turn, eventually becoming tangled in the rope, causing the antenna to break off. We were not the only team to have trouble with tracking and data transmission so hopefully these problems will be corrected for the next balloon launch team that decides to partake in the HALO project.

For more information on the HALO II launch you can go to the following website

http://www.nearspacenetwork.com/group/halo2project

Meeting with the Payload Team and Instrumentation Team

A launch team meeting was held on Wednesday, July 8th, in order to discuss work to be done and make practical plans. During this meeting, members from the payload team and the instrumentation team were present to discuss their payloads and their projected timeframes.

Brittany Hauser reported on the payload team's progress. It was communicated that they are intending two separate payload. The first would consist of seeds and coffee beans. This simplicity of this first payload enabled them to be ready for a launch in mid-July. A model of this first payload was shown to the launch team, and the launch team advised that the enclosure of the payload be made stronger. Their second payload will incorporate experiments with watches recorded by a camera, and a microphone and speaker to record the speed of sound. The launch team clarified the weight

specifications to which the payload would have to conform. This second payload should be ready later in the summer. The first weekend in August was discusses as a strong possibility.

Ryan Haley discussed the goals of the instrumentation team. They plan to use a camera and lens filters for various wavelengths in order to acquire data. In addition to this, they plan on equipping the payload with various other sensors in order to take other environmental and atmospheric data. They hope to accomplish these plans in three phases, and consequently three launches. The first of these they hope to accomplish this summer. A projected timeline was not yet available, however.

Hardware & Software

At the time of this meeting, all the StratoStar equipment was at the supplier being updated. A parachute was also needed, which StratoStar is able to supply.

Practical Plans

The first launch was planned for July 18th, and would consist of the simple payload of seeds and coffee beans. A second launch was tentatively planned for August 1st. The instrumentation team's first launch is also planned for the summer, but a tentative date is not yet available.

Future Plans

After the launch on July 18th, it came to the team's attention that there was a lot to improve future launches on. The main priority was to install a more accurate GPS. The GPS on the current payload was ideal for tracking long distances; however after the landing the reading is only precise to a square mile area. Also engineering a device to fill the balloon with helium that will fit any balloon size is another idea. And finally the team determined that a launching mechanism to hold the balloon should be engineered.