

## **Design of the Balloon Deployable Detector System**

When *Designing a Balloon Deployable Detector System* there are many parameter you have to stay within. The key Parameters are:

### **Weight Limits**

### **Legal limits**

The *weight limit* can be a very serious issue in many balloon projects. The weight a balloon can carry depends on how much lift the balloon has. First find the volume of a balloon assuming that it is a perfect Sphere.  $\frac{4}{3}\pi r^3$  Then you Multiply the answer you get from the previous equation in liters times 1 gram. Then that is how much your balloon can lift. It is important to remember that the Kite line has mass also so include that into your calculation.

### Legal Limits

When Flying a balloon there are many legal parameters you have t stay in before you have to get an FFA waiver. Here are some of the Parameters found on the FAA website. YOU NEED TO GET WAIVER IF:

1. Less than 500 feet from base of any cloud.
2. More than 500 feet above surface of earth.
3. From an area where ground visibility is less than 3 miles.
4. Within 5 miles of boundary airport.

If you fall in any one of the Categories above then you must have an FAA waiver. These parameters are waived though if you are flying below 250 Ft.

We Designed the balloon by:

1. recognized our parameters
2. set our limits for altitude

3. set our limits for weight
4. Worked out problems of “how to get data to ground”
5. Found all power needed and ordered battery
6. Design Gondola according to what needs to be held.
7. Build electronics
8. LAUNCH

*Sources: [www.FAA.gov](http://www.FAA.gov)*