

REQUEST FOR PROPOSAL

**REQUEST FOR PROPOSAL (RFP) NUMBER: 2519F01
FOR
DESIGN CONCEPT
OF THE**

*Balloon Satellite
(BALLOONSAT)*

October 22, 2001

B.A.C.M.

**Bill Ardesson
Andrew Campbell
Joseph Diniega
Brian Lam
Adria Omer
Jon Rhode
Nathan Winder**

Mission Statement

To provide a balloon satellite capable of producing a dual spectrum perspective of the Earth at pre-specified altitudes.

Overview

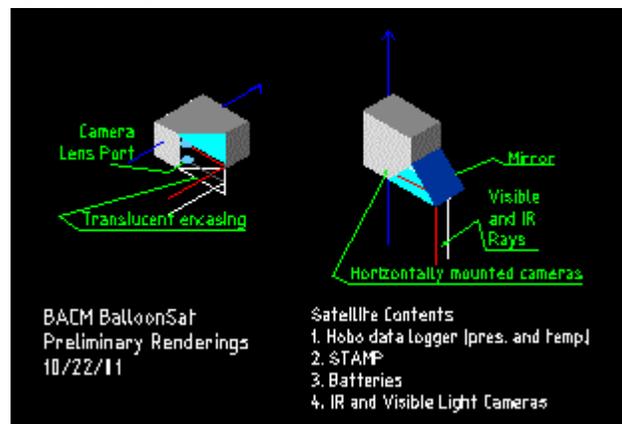
The goal of our mission is to use imaging of both spectrums to be able to create a side-by-side comparison of our planet as seen in the various wavelengths. This will enable us to understand how the world differs from the small portion our eyes limit us to seeing.

Through the data received from this project, we will discover the differences between the visible light and the infrared spectrum from altitudes of 100,000 ft and 300ft AGL (Above Ground Level). We will also observe how the light travels though different temperatures and densities of the atmosphere.

Technical Overview

In our design, we will attempt to investigate the inferred spectrum emanating from the earth. The images taken from this investigation will be compared to images taken from a visible light camera in order to illustrate the differences in the imaging outputs of the two different cameras.

Our design is as follows:



Our design will utilize several different pieces of hardware to accomplish its objective. An infrared camera will be used in conjunction with a visible light camera in order to analyze the different imaging outputs of the two cameras. A pressure sensor will be used to measure the rate at which the pressure decreases while the balloon SAT is ascending. We will need material such as sheet metal or

aluminum to build the outer shell for the balloon SAT. A temperature probe will be needed to measure the temperature at both the launch site and for the duration of the ascent and descent. In addition to the sensing equipment, a HOBO data logger will be used to record the temperature and pressure measurements, batteries will be needed to power the cameras and sensors, and wires and circuitry will be needed to make the connections between the sensors and the recorders work.

Several different tasks need to be completed before the balloon SAT is completed. Each one of the sensors and cameras needs to be configured and wired to its recorder and to the power supply. Each one of the components will need a team member working exclusively with that component. The additional team members will be responsible for quality control, testing, and budget. For our group it has been decided that Bill and Jon will be responsible for both of the cameras; Nathan will be responsible for the shell; Adria and Joseph will be responsible for the data logger, temperature, and pressure sensors; and Andrew and Brian will be responsible for the integrated circuitry and quality control.

Several different methods will be used to test our design to insure that it will perform its desired functions. We will test each individual sensor and both cameras to make sure they report the data correctly. As well as testing the components, we will also test the data logger to make sure it records the data. In addition, we will test the design for impact stress by throwing it down a flight of stairs.

The balloon SAT will be launched on a high altitude latex balloon. Our satellite will be tied onto a string along with the other satellites from the class. This method will allow our satellite to reach an altitude of approximately 100,000 feet.

In order to prevent any type of injury during construction and at the launch site we will implement quality control measures, which will lead to safe construction and launch techniques. These safety precautions such as making sure everyone is informed of potential dangers and the practice of safe construction techniques will help to prevent any type of injury.

At the launch site, several events will take place before the balloon SAT is launched. The launch company, EOSS, primarily coordinates these events, however the team is responsible for making sure that the balloon SAT is ready to be launched and that the balloon SAT is held in place while the balloon is lifting off.

Management and Cost

Schedule

To meet the launch date of December 1 we plan to rigorously follow our planned schedule of events and meetings. If extra meeting times are required to

stay on track with our set schedule, we will add them. We are committed to keeping this project on track and supported by quality work:

Tuesday October 16:	Team Meeting, assign tasks to team members
Thursday October 18:	Team meeting, discuss progress on proposal
Sunday October 21:	Team meeting, finalize proposal
Monday October 22:	<i>Proposals due @ 3:40 p.m., slide show presentation</i>
Wednesday October 24:	Receive and discuss comments on proposal
Wednesday October 31:	<i>Completed Design</i>
Thursday November 1:	Team Meeting, Discuss any final design details
Sunday November 4:	Team meeting, Design and finalize team presentation
Monday November 5:	Team presentations, (Industry will be present)
Tuesday November 6:	Team meeting, decide who will get what parts
Thursday November 8:	Team meeting, get parts, discuss any setbacks/problems
Friday November 9:	<i>All hardware must be accounted for</i>
Tuesday November 13:	Team meeting, begin building prototype
Thursday November 15:	Team meeting, final prototype design
Friday November 16:	<i>Completion of prototype</i>
Sunday November 18:	Team meeting, begin building CUBESAT
Tuesday November 20:	Team meeting, finish building CUBESAT
Friday November 25:	<i>Testing of Final Design</i>
Tuesday November 27:	Team meeting, work out any final bugs
Wednesday November 28:	<i>Team Readiness Review (Industry will be present)</i>
Thursday November 29:	Team meeting, planning and discussion of launch date
Saturday December 1:	<i>Launch date (Weather dates include 12/2, 12/8, and 12/9)</i>
Tuesday December 4:	Team meeting, split up jobs for final report writing
Thursday December 6:	Team meeting, finalize report
Monday December 10:	<i>Final reports due</i>

Team Members:

Bill Ardesson: Bill comes from a family of four; he has an older sister named Michelle. He loves the Marines and looks forward to becoming a hero for our county. He wants to fly jets for the Marines post-graduation.

High School: Frenchtown High (Frenchtown, Montana)

College: Aerospace Engineering- CU Boulder;

Special Skills: Bill has the amazing ability to turn frogs into princesses. He is working on his private pilot's license, and loves skiing.

Nathan Winder: Nathan is very dedicated to the Air Force; he's quite interested flying and space systems. He's always been a natural leader and he's very motivated to "get the job done".

High School: Douglas County (Castle Rock, Colorado)

College: Electrical Engineering- CU Boulder;

Special Skills: AutoCAD, building, mechanical

Andrew Campbell: Andrew is a people person. He's wonderful at working in teams and helps in the university theatre. Andrew has a dog and a younger sister at home that he misses very much.

High School: Cherry Creek (Englewood, Colorado)

College: Open Engineering- CU Boulder;

Special Skills: Andrew is very good at fixing things.

Brian Lam: Brian enjoys computer programming, and is interested in geology and paleontology. He has lived in California most of his life and enjoys long walks on the beach.

High School: Arapahoe (Littleton, Colorado)

College: Computer Science - CU Boulder;

Special Skills: Brian is good at programming, ramen noodle preparation, and putting ideas into words.

Joe Diniega: Joe has 25 hours of logged flight time, was a member of National Honors Society, is an Eagle Scout, and makes a mean campfire.

High School: Radford (Honolulu, Hawaii)
College: Aerospace Engineering- CU Boulder;

Special Skills: Joe has valuable contact throughout industry that will help our team to acquire the goods we need to complete this project well. Joe is also an amazing knot tier (Eagle Scout).

Jon Rohde: Jon has a special place in his heart for restored cars. He has spent many of the most valuable hours of his life underneath the hood of a car learning with his dad.

High School: Loveland High (Loveland, Colorado)
College: Aerospace Engineering- CU Boulder;

Special Skills: Jon is very good with hands-on activities, and enjoys good, honest, work.

Adria Omer: Adria is a fun-loving blonde that loves airplanes and her family. She is working on her Private Pilot's License, and spends Sundays at the Longmont Airport.

High School: Longmont High (Longmont, Colorado)
College: Aerospace Engineering- CU Boulder;

Special Skills: Adria is good at organization, teamwork, splitting jobs between group members, and meeting deadlines. Adria has worked at Woody's Woodfired Pizza and is still able to get free food.

Budget

Batteries	\$10
Small visual camera	\$60
Small IR camera	\$200
HOBO data logger	\$60
Basic circuitry	\$10
BASIC stamp	\$40
Casing and misc. supplies	\$20

How to keep this budget:

In order to keep the budget, which was proposed, our team would not spend any additional funds on individual items then originally allotted.
