

ARIES-GPS Payload

Inter-American University of Puerto Rico Bayamon Campus

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I. Activities of the team members

We will describe the activities that the members of the ARIES-GPS Payload are working at this point of the project.

- **Electronic system**
 - The electrical team is working on research to select the appropriate electronic devices for the Aries Sat Control and power board. This board will be designed to convert the HASP power to the adequate voltage value for each component aboard of the Aries Sat. Also this board will have the microcontroller to manage the GPS receivers and the temperature sensors within the Aries Sat. In addition the Electronic team is working on research to choose the correct GPS antennas and feeder RF (radio frequency) cables for the GPS receivers. The Aries Sat will have two dual frequency GPS receivers inside. These receivers need a dual frequency antenna with the right beamwidth and gain to receive the GPS satellites signal. Also these GPS receivers need proper RF cable between the receiver and the antenna to avoid interference and losses.

- **Software System**
 - The Software team is studying the Novatel Firmware Reference Manual and the Novatel Installation and Operation User Manual. These manuals are the reference documents to be familiar with the COTS Novatel OEMV- 1DF dual frequency GPS receiver and its software arrangement. Also the software team is reading papers about the scientific Astra Cases GPS receiver to be familiar with it.

- **Mechanical System,**
 - The Mechanical team is working on the research to select a material to build the payload structure. This is a fundamental part on the ARIES-GPS payload because it has to be able of support the temperature range and the vertical and horizontal gravitational force exerted on it during the balloon flight.

II. Issues Encountered During Payload Design

During this month we start to work with the mass and the volume issue, because our payload is very close to the HASP mass limited. To be able of perform radio occultation two GPS receiver has to be aboard on the payload. In addition to test the performance of two

different kind GPS receiver the payload will be compose of four different GPS receiver. This means extra weight and volume our payload is about 30 percent.

III. Milestones Achieved

At the time of the projects this are the milestone that we have achieved.

- Recruitment of team members.
- Groups were appropriated established and assigned their task.

IV. Current Team Members and Leaders

