TigreSAT 2010 &2011
February Monthly Report

2010-2011 TigreSAT Monthly Progress Report

EQUIS ADS 2010 PAYLOAD

For the ADS 2010 experiment we have done no change to the payload since it had passed all the test, requirements and integration necessary for LSU HASP platform. Calibration is needed for the Accelerometer and Gyroscope and we have being working on an instrument that will be able to calibrate magnetometer, accelerometer and gyroscope. A front panel was developed with its virtual environment (VI) in Lab View 2010. The interface between the computer and the instrument is the Data Acquisition (DAQ) device that allows the control signals, a circuit (Darlington pair) was implemented for amplification these signals to control the actuators. By end of March the calibration process will be complete. It is important to explain that we are just obtaining the equations for the payload; no changes will be done to the payload's software, structure and electronics. The calibration equations obtain will be used for post flight analysis.

TigreSAT 2011 PAYLOAD

During February TigreSAT project has formed a Software Development Team (SDT) with 12 students to develop the programming for the dsPIC33F programming with meetings twice a week to monitor tasks and resolve software issues. More work has been done on the PDR working with the requirements and documentation. The ADS board schematic previously done in Express PCB is being designed in Eagle Cad soft and with the surface mounts components placed in a PC104 standard for CubeSAT as in Figure 1.

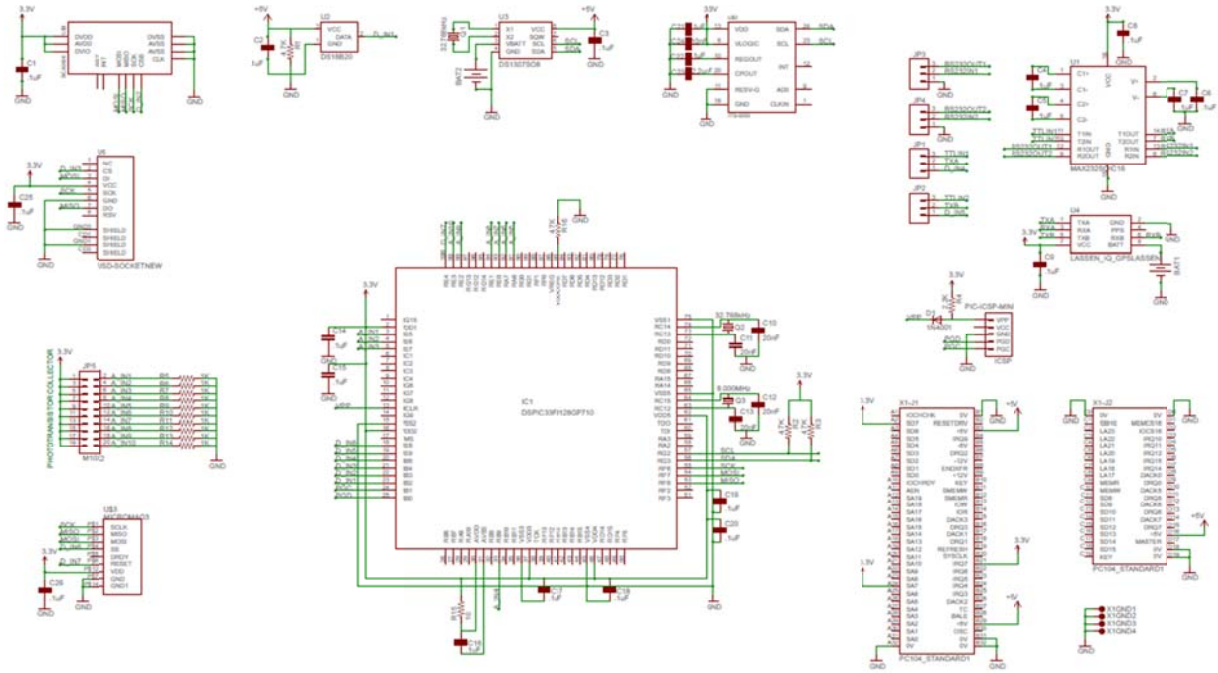

Figure 1 Schematic in Eagle of the ADCS board

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Work has been put into determining and completing the placement of the solar panel on the CubeSAT structure, performing the thermal analysis in ANSYS and the selection of powder lubrication for the actuators, minimizing current consumption, developing a system to isolate the HASP platform for the Solar panel system. Intensive research is dedicated to develop an image processing scheme to recognize the difference, also a student with previous work doing this was integrated to project to develop the proper code for this. Extensive work was done on answering to all the comments for the TigreSAT CFP, and developing a de-scope plan as a minimum success criteria for this experiment. A plan was implemented to develop the payload in a manner that the minimum success criteria will be meet first and then more work will be apply to the complete goal of the payload.

Issues encountered

1. Identifying the correct star for the HASP flight in September.

Work to be accomplished

Finish details in the PC104 SCH; develop a code for the sensors used in the previous payload.
Develop the PCB layout of the schematic by March 6, 2011.
Determine the inertia of the payload for the most efficient motor selection.
Obtain all the mathematical equation representing the structure to allow the controls.

The Inter American University TigreSAT team has spent time expanding the team structure as shown in the table below.

ARIES Students and Tasks

Students	Task
Javier Espinosa	ADS, ACC
Edwin Pagan	ACC
Victoria Gonzalez	Thermal Analysis
Abdiany Rivera	Structure
Ana Espinal	PDR, Bottom Structure
Jose Almonte	Sun Sensor
Nestro Vargas	EPS
Jose Fermin	Solar Panel
Rose Navarro	Motor Research
Jose Fraticelli	SDT
Erika Portilla	SDT
Jose G. Almonte	SDT
Juan Colón	SDT, Telemetry
Pierre R. Martinez	SDT, Magnetometer
Mairim Nieves	SDT, ACS
Jorge Quinones	SDT, SD Card
Luis Santiago	SDT, ACS
Abel Torres	SDT, Gyroscope
Jose C. Vargas	SDT
Hugo Pastrana	SDT, Accelerometer
Rauly Torres Cruz	SDT
Alexander Muñiz Román	SDT
Juan G. Rosado	SDT, GPS
Brian melendez	SDT

Table 1 Student Member fot TigreSAT