

Minutes for CuSEDS meeting, Monday January 24, 2011

Rides are available for the ASX symposium (Astronomy & Space eXploration society) this Friday, January 28 in Toronto. Contact President Jesse.

Project Team Reports

Moonbuggy

Most of the parts have been finished. Welding has commenced. The front half of the frame is complete, and the back half of the frame is in progress. The frame should be complete by the end of the week. Moonbuggy meets Tuesdays and Thursdays in the structures lab at 5:30. The team is working on a 150 page report on the design process which will allow them to keep their space in the welding shop in the future. The Budget is complete. They have 2 more applications to make for funding and require \$2500. They expect to have completed the moonbuggy around reading week. The competition will take place the first weekend of April in Huntsville, Alabama. The buggy is able to fold enough that large vehicles should not be required for transportation. Moonbuggy team has negotiated the use of a gravel pit at Neptec for testing the moonbuggy. They are looking to meet with people from Industrial Design RE: seats. They are also looking for a 9' x 2' x 1/8" sheet of aluminum that has gone missing. They would like to remind other teams ordering materials not to leave any materials outside the shops, as there are people with a pickup truck going around taking these materials (thinking they are scrap).

CHRRP (Carleton Hybrid Rocket Research Project)

The engine and test stand designs have been finalised.

The engine is completely disassemble-able. Each part can be removed and tested separately. It is using paraffin wax as fuel and N_2O (nitrous oxide) as an oxidizer. Its design specs include a burn time of 4 seconds, a total impulse of 4000 Ns, a specific impulse of 245 s and an average thrust of 1000 N.

There test stand will be vertical and adaptable to a wide range of engine sizes.

The Control panel is almost finished. A blast screen has been donated

Metals and Materials have been acquired.

Construction begins this weeks.

The quarry is available for testing when needed.

The 2009 engine has been refurbished for demo but demos have been delayed due to cold weather (could have same effect as O-ring failure) .

A partnership has been negotiated with Waterloo regarding testing of a Nitrogen Tetroxide Oxidizer.

There is a goal to compete in IREC 2012/2013 (Intercollegiate Rocket Engineering Competition) in Utah.

The goal of the competition is to launch a 10lb load to 10,000 ft with the highest possible accuracy. In the "Advanced" category, they attempt to launch the same load to 25,000 ft. No one has ever competed in the advanced category.

CanSat

The goal of CanSat this year is to build an autonomously separable egg lander. The descent of the lander and carrier should be controlled to 5.5ms^{-1} and 4ms^{-1} , respectively. Measuring the impact force is optional. Ideas this year included non-Newtonian fluids (this idea was rejected after some testing) and a rubber band protection matrix. A suggestion was made at the meeting to include the use of florist foam. The separation mechanism has been designed. Building has begun.

CSDC (Canadian Satellite Design Challenge)

The requirements for the competition were released January 1st. The team now has 15-20 people divided into teams for subsystems. The primary payload will be a solar scintillator for monitoring solar activity. This idea was brought forth by a physics student. The scintillator will be used to detect coronal mass ejections coming straight toward earth. The current satellites observing coronal mass ejections do so by blocking out the sun with a plate and viewing the corona. However this only detects mass ejections coming off the sides of the sun and not those coming directly towards earth. The scintillator measures cosmic rays. A dip in the frequency of cosmic ray events can be indicative of a coronal mass ejection up to three days in advance of its arrival at earth. This can be used to provide information to hydro companies, etc. that might be effected. A secondary payload is a possibility still under consideration.

CuSEDS is planning a movie night to see the documentary "Orphans of Apollo" about the MIR space station. A poll will be sent out to the member list regarding a good day to do this. Another movie possibility for the future is the documentary "Space Tourists".

We are also looking into Astronomy nights with the Astrophysics Society – the details on this are still sketchy.

Absent from this meeting was the Carleton High Altitude Probe team. They will have an update at the next meeting which should be in mid-February.