

Milestone Review Flysheet 2017-2018

Institution Citrus College

Milestone PDR

Vehicle Properties

Total Length (in)	124
Diameter (in)	6.08
Gross Lift Off Weigh (lb.)	41.54
Airframe Material(s)	Blue Tube 2.0
Fin Material and Thickness (in)	Aircraft Wood (0.5)
Coupler Length/Shoulder Length(s) (in)	30.5

Motor Properties

Motor Brand/Designation	Aerotech L1170-FJ
Max/Average Thrust (lb.)	331.1/271.3
Total Impulse (lbf-s)	946.8
Mass Before/After Burn (lb.)	41.54/35.38
Liftoff Thrust (lb.)	331.1
Motor Retention Method	Motor Retainer

Stability Analysis

Center of Pressure (in from nose)	86.45
Center of Gravity (in from nose)	73.29
Static Stability Margin (on pad)	2.11
Static Stability Margin (at rail exit)	2.11
Thrust-to-Weight Ratio	6.5
Rail Size/Type and Length (in)	124
Rail Exit Velocity (ft/s)	64.6

Ascent Analysis

Maximum Velocity (ft/s)	631
Maximum Mach Number	0.57
Maximum Acceleration (ft/s^2)	227.1
Predicted Apogee (From Sim.) (ft)	5270

Recovery System Properties

Drogue Parachute

Manufacturer/Model	Fruity Chutes			
Size/Diameter (in or ft)	30			
Altitude at Deployment (ft)	5270			
Velocity at Deployment (ft/s)	37.6			
Terminal Velocity (ft/s)	10.2			
Recovery Harness Material	Tubular Nylon			
Recovery Harness Size/Thickness (in)	1			
Recovery Harness Length (ft)	30			
Harness/Airframe Interfaces	Tubular Nylon recovery harness will be attached to a steel quick-link. The quick-link will latch onto a U-bolt that is attached to a bulkplate inside the airframe.			
Kinetic Energy of Each Section (Ft-lbs)	Section 1	Section 2	Section 3	Section 4
	9.57	0.92	2.16	14.51

Recovery System Properties

Main Parachute

Manufacturer/Model	Fruity Chutes			
Size/Diameter (in or ft)	14			
Altitude at Deployment (ft)	800			
Velocity at Deployment (ft/s)	64.3			
Terminal Velocity (ft/s)	10.2			
Recovery Harness Material	Tubular Nylon			
Recovery Harness Size/Thickness (in)	1			
Recovery Harness Length (ft)	15			
Harness/Airframe Interfaces	Tubular Nylon recovery harness will be attached to a steel quick-link. The quick-link will latch onto a U-bolt that is attached to a bulkplate inside the airframe.			
Kinetic Energy of Each Section (Ft-lbs)	Section 1	Section 2	Section 3	Section 4
	9.57	0.92	2.16	14.51

Recovery Electronics

Altimeter(s)/Timer(s) (Make/Model)	Missile Works RRC2+ Altimeter
Redundancy Plan and Backup Deployment Settings	Two RRC2+ altimeters, each with their own power supply, will be connected to two separate black powder containers. The secondary
Pad Stay Time (Launch Configuration)	5 hours

Recovery Electronics

Rocket Locators (Make/Model)	Altus Metrum	
Transmitting Frequencies (all - vehicle and payload)	Vehicle GPS: 434.55 MHz	
Ejection System Energetics (ex. Black Powder)	Black Powder	
Energetics Mass - Drogue Chute (grams)	Primary	3.24
	Backup	3.24
Energetics Mass - Main Chute (grams)	Primary	4.212
	Backup	4.212
Energetics Masses - Other (grams) - If Applicable	Primary	
	Backup	

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Payload

	Overview
Payload 1 (official payload)	The objective of the payload is to safely transport and deploy an autonomous rover capable of traversing multiple varieties of terrain. When recharging is necessary, the rover will deploy a set of solar panels. The payload bay will have to withstand a high amount of force caused by the motor ignition. The rover must have the ability to be deployed without becoming trapped in the deployment system. Upon deployment, the rover will navigate through any terrain the vehicle lands upon.
	Overview
Payload 2 (non-scored payload)	

Test Plans, Status, and Results

Ejection Charge Tests	The sub-scale ejection charge test will be done on December 8th, 2017. The full-scale ejection charge tests will be done on January 19th, 2017.
Sub-scale Test Flights	The sub-scale test launch will be conducted on December 9th, 2017.
Full-scale Test Flights	For the full-scale test flights, three dates have been chosen as possible launch dates should more than one launch be necessary. The dates are January 20th, February 10th, March 10th 2017.

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Additional Comments

