

Milestone Review Flysheet

Institution University of Alabama, Huntsville

Milestone PDR

Vehicle Properties

Total Length (in)	119
Diameter (in)	6.17
Gross Lift Off Weigh (lb)	46
Airframe Material	G12 Fiberglass
Fin Material	G10 Fiberglass
Coupler Length	14"

Motor Properties

Motor Designation	Aerotech L1420R-P
Max/Average Thrust (lb)	373.23/323.80
Total Impulse (lbf-s)	1038.17
Mass Before/After Burn	10.1/5.64
Liftoff Thrust (lb)	346.4
Motor Retention	Tail Cone/Snap Ring

Stability Analysis

Center of Pressure (in from nose)	90.374
Center of Gravity (in from nose)	76.883
Static Stability Margin (Burnout)	3.04
Static Stability Margin (off launch rail)	2.18
Thrust-to-Weight Ratio	6.87
Rail Size and Length (in)	1515, 96 in.
Rail Exit Velocity	59.42

Ascent Analysis

Maximum Velocity (ft/s)	628.72	ft/s
Maximum Mach Number	0.57	
Maximum Acceleration (ft/s^2)	1494.7	ft/s^2
Target Apogee (From Simulations)	5283.2	ft
Stable Velocity (ft/s)	59.42	ft/s
Distance to Stable Velocity (ft)	96	in

Recovery System Properties

Dogue Parachute

Manufacturer/Model	Fruity Chutes/CFC-18			
Size (ft^2)	1.7			
Altitude at Deployment (ft)	5280			
Velocity at Deployment (ft/s)	0			
Terminal Velocity (ft/s)	107.2			
Recovery Harness Material	Nylon			
Harness Size/Thickness (in)	1			
Recovery Harness Length (ft)	50			
Harness/Airframe Interfaces		The shock cord that is utilized for the drogue chute has two connection points, one to the bulkhead under the nose cone and one to the upper end of the avionics bay.		
Kinetic Energy of Each Section (Ft-lbs)	Upper Airframe	Lower Airframe	N/A	N/A
	1173.45	2499.47		

Recovery System Properties

Main Parachute

Manufacturer/Model	SkyAngle/CERT-3 XLarge			
Size (ft^2)	89			
Altitude at Deployment (ft)	600			
Velocity at Deployment (ft/s)	83.4			
Terminal Velocity (ft/s)	12.47			
Recovery Harness Material	Nylon			
Harness Size/Thickness (in)	1			
Recovery Harness Length (ft)	50			
Harness/Airframe Interfaces		The shock cord that is utilized for the main chute has two connection points, one to the lower section of the avionics bay and one to the all thread which is connected to the motor casing.		
Kinetic Energy of Each Section (Ft-lbs)	Nose Cone	Upper Airframe	Lower Airframe	N/A
	10.5	21.07	55.92	

Recovery Electronics

Altimeter(s)/Timer(s) (Make/Model)	PerfectFlite Stratologger SL100
Redundancy Plan	Dual, independent system
Pad Stay Time (Launch Configuration)	Indefinite with pull pin installed, unknown with pin removed (hours)

Recovery Electronics

Rocket Locators (Make/Model)	XBee transmitter with Antenova GPS chip
Transmitting Frequencies	***Required by CDR***
Black Powder Mass Drogue Chute (grams)	1.45
Black Powder Mass Main Chute (grams)	2.48

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Autonomous Ground Support Equipment (MAV Teams Only)

Capture Mechanism	Overview
	N/A
Container Mechanism	Overview
	N/A
Launch Rail Mechanism	Overview
	Include Description of rail locking mechanism
Igniter Installation Mechanism	Overview
	N/A

Payload

Payload 1	Overview
	The overall goal of this project is to design a payload system that will mechanically induce and control the angular velocity about the roll axis of a rocket. This is to be done without causing excessive drag or instability due to secondary control surfaces positioned aft of the center of gravity.

Test Plans, Status, and Results

Ejection Charge Tests	Test Plans: Ground Tests to confirm proper ejection and appropriate charge sizing Status: To be conducted post-assembly Results: N\A
Sub-scale Test Flights	Test Plans: Sub scale vehicle will be flown to verify overall vehicle design, fin design, fin mounting design, and motor size. Status: To be conducted in November/December Results: N\A
Full-scale Test Flights	Test Plans: Testing critical recovery systems, payload function, and flight simulations Status: To be conducted post-sub scale launch Results: N\A

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Additional Comments