

Milestone Review Flysheet

Institution: The University of Toledo **Milestone:** Flight Readiness Review

Vehicle Properties	
Total Length (in)	86.97
Diameter (in)	4
Gross Lift Off Weigh (lb)	22.0 lb
Airframe Material	Fiberglass
Fin Material	Fiberglass
Coupler Length	9"

Motor Properties	
Motor Designation	K2000
Max/Average Thrust (lb)	545.6/456.8
Total Impulse (lbf-s)	524
Mass Before/After Burn	87 oz/ 46 oz
Liftoff Thrust (lb)	545.6
Motor Retention	Aeropack

Stability Analysis	
Center of Pressure (in from nose)	60.3
Center of Gravity (in from nose)	68.6
Static Stability Margin	2.07
Static Stability Margin (off launch rail)	2.07
Thrust-to-Weight Ratio	20:01
Rail Size and Length (in)	8 ft 1010
Rail Exit Velocity	98.175

Ascent Analysis	
Maximum Velocity (ft/s)	750 ft/s
Maximum Mach Number	0.67
Maximum Acceleration (ft/s^2)	816 ft/s^2
Target Apogee (From Simulations)	5349 ft
Stable Velocity (ft/s)	46 ft/s
Distance to Stable Velocity (ft)	1.97 ft

Recovery System Properties				
Dogue Parachute				
Manufacturer/Model	Spheroschute			
Size	18"			
Altitude at Deployment (ft)	5345 ft			
Velocity at Deployment (ft/s)	16 ft/s			
Terminal Velocity (ft/s)	75 ft/s			
Recovery Harness Material	Rip-stop Nylon			
Harness Size/Thickness (in)	1/8 in x 1/2 in			
Recovery Harness Length (ft)	25 ft			
Harness/Airframe Interfaces	Eyebolt attached to top of Payload Bay and to the bottom of the recovery bay.			
Kinetic Energy of Each Section (Ft-lbc)	Section 1	Section 2	Section 3	Section 4
	418	640	N/A	N/A

Recovery System Properties				
Main Parachute				
Manufacturer/Model	LOC Precision			
Size	60"			
Altitude at Deployment (ft)	700			
Velocity at Deployment (ft/s)	75 ft/s			
Terminal Velocity (ft/s)	24 ft/s			
Recovery Harness Material	Rip-stop Nylon			
Harness Size/Thickness (in)	1/8"x1/2"			
Recovery Harness Length (ft)	25 ft			
Harness/Airframe Interfaces	Eye bolt attached to top of recovery bay and bulkhead of in the nosecone.			
Kinetic Energy of Each Section (Ft-lbc)	Section 1	Section 2	Section 3	Section 4
	14	29	65	N/A

Recovery Electronics	
Altimeter(s)/Timer(s) (Make/Model)	StrattologgerCF
Redundancy Plan	Second StratologgerCF and backup blackpowder charges
Pad Stay Time (Launch Configuration)	Up to 8 hours

Recovery Electronics	
Rocket Locators (Make/Model)	TeleGPS
Transmitting Frequencies	434.550 MHz
Black Powder Mass Drogue Chute (grams)	2 g
Black Powder Mass Main Chute (grams)	2 g

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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
	N/A
Igniter Installation Mechanism	Overview
	N/A

Payload

Payload 1	Overview
	Our payload will use a single servo and gear set to roll the vehicle in a controlled manner. After a controlled rotation, a counter roll will be administered to the vehicle to stop the rotation and control the vehicle.
Payload 2	Overview
	N/A

Test Plans, Status, and Results

Ejection Charge Tests	Ejection charge tests will be ran multiple times, once shortly after construction and again shortly before full-scale test flight. An ejection charge test will also be ran before any full-scale launch.
Sub-scale Test Flights	Subscale model was built, tested, and flown by team members new to rocketry. They were overseen by veteran members. Launch date was December 10th, 2016.
Full-scale Test Flights	Full-scale flight took place on Feb 18th, in Three Oaks Michigan. Flight was successful as detailed in the FRR.

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Additional Comments										