Milestone Review Flysheet

nstitutio	The University of Toledo	Mileston	Critical Design Review

Vehicle Properties

Total Length (in)	90.72
Diameter (in)	4
Gross Lift Off Weigh (lb)	9263
Airframe Material	Fiberglass
Fin Material	Fiberglass
Coupler Length	9"

Motor Properties

Motor Designation	2430-K661-BS-P
Max/Average Thrust (lb)	171.15 / 148.49
Total Impulse (lbf-s)	546.38
Mass Before/After Burn	2528 / 1265 (g)
Liftoff Thrust (lb)	148
Motor Retention	Aeropack

Stability Analysis

Center of Pressure (in from nose)	72.425 in
Center of Gravity (in from nose)	62.282 in
Static Stability Margin	2.52
Static Stability Margin (off launch rail)	2.6
Thrust-to-Weight Ratio	7.32:1
Rail Size and Length (in)	96
Rail Exit Velocity	58 (fps)

Ascent Analysis

Maximum Veloxity (ft/s)	703
Maximum Mach Number	0.63
Maximum Acceleration (ft/s^2)	239.2
Target Apogee (From Simulations)	5300 ft
Stable Velocity (ft/s)	40.1
Distance to Stable Velocity (ft)	3.8

Recovery System Properties

Dogue Parachute

Manufacturer/Model	Spherachute
Size	24"
Altitude at Deployment (ft)	5300
Velocity at Deployment (ft/s)	34.706
Terminal Velocity (ft/s)	81.19
Recovery Harness Material	nylon shock cord
Harness Size/Thickness (in)	1/8 in x 1/2 in
Recovery Harness Length (ft)	15 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-lbs)	Section 1	Section 2	Section 3	Section 4
	495.49	710.89	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)	80.26
Terminal Velocity (ft/s)	19.39
Recovery Harness Material	nylon shock cord
Harness Size/Thickness (in)	1/8"x1/2"
Recovery Harness Length (ft)	15 ft
Harness/Airframe Interfaces	Eye bolt attached to top of recovery bay and bulkhead of in the nosecone.

Kinetic Energy of Each Section (Ft-lbs)	Section 1	Section 2	Section 3	Section 4
	8.87	20.01	41.44	N/A

Recovery Electonics

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 Electonics

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

Milestone Review Flysheet

nstitutio	The University of Toledo	Mileston	Preliminary Design Review

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 ro 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 test flight will be flown in early to mid February. Flight will be done with smaller motor (K185-W) so we can stay within the flight ceiling of 3000 ft. Flight will be done with fully operational payload.

Milestone Review Flysheet

nstitutio	The University of Toledo	Mileston	Critical Design Review

Additional Comments