Milestone Review Flysheet

Institutio	Spring Grove Area High School (Team Darwin)	Milestone	PDR

Vehicle Properties

Total Length (in)	80.9169
Diameter (in)	4
Gross Lift Off Weigh (lb)	25.13
Airframe Material	Fiberglass
Fin Material	G10 Fiberglass
Drag	0.95

Motor Properties

Motor Manufacturer	Cesaroni
Motor Designation	K1440 White Thunder
Max/Average Thrust (lb)	411/349
Total Impulse (lbf-s)	593
Mass Before/After Burn	66.76 oz, 25.8 oz
Liftoff Thrust (lb)	411

Stability Analysis

Center of Pressure (in from nose)	53.4795 in
Center of Gravity (in from nose)	43.0120 in
Static Stability Margin	2.62
Static Stability Margin (off launch rail)	2.86
Thrust-to-Weight Ratio	16.4
Rail Size and Length (in)	1.5/72
Rail Exit Velocity(ft/s)	84.3

Ascent Analysis

Maximum Veloxity (ft/s)	644.87	
Maximum Mach Number	0.578	
Maximum Acceleration (ft/s^2)	592.1	
Target Apogee (From Simulations)	5184.58	
Stable Velocity (ft/s)	44	
Distance to Stable Velocity (ft)	2.07	

Recovery System Properties

Dogue Parachute

Manufacturer/Model	Fruitychutes/IFC			
Size	24 in			
Altitude at Deployment (ft)	5184.58			
Velocity at Deployment (ft/s)	2.95			
Terminal Velocity (ft/s)	98.83			
Recovery Harness Material	Tubular Nylon			
Harness Size/Thickness (in)	1			
Recovery Harness Length (ft)	15			
Harness/Airframe Interfaces Kinetic	The harness will be attached ton key structural components via quick links to safely secure the harness to the rocket			
Section 1	Section 2	Section 3	Section 4	

Recovery System Properties

Main Parachute

Manufacturer/Model	Fruitychutes			
Size	72 in			
Altitude at Deployment (ft)	600			
Velocity at Deployment (ft/s)	98.83			
Terminal Velocity (ft/s)	18.5			
Recovery Harness Material	Tubular Nylon			
Harness Size/Thickness (in)	1			
Recovery Harness Length (ft)	25			
Harness/Airframe Interfaces Kinetic	The harness will be attached ton key structural components via quick links to safely secure the harness to the rocket			
Section 1	Section 2	Section 3	Section 4	

	58604	869295	1035341			2053	30460	36281	

Recovery Electonics	
Altimeter(s)/Timer(s) (Make/Model)	PerfectFlite CF Altimeters
Redundancy Plan	The E-Bay will have 2 altimeters, each altimeter will have 2 charges, one for drouge and the other main. 2 altimeters will give it a redundant system.
Pad Stay Time (Launch Configuration)	Each altimeter will have a battery life of 4 hrs.

Recovery Electonics	
Rocket Locators (Make/Model)	Communications Specialists Inc. R-300 R/C ELT Receiver
Transmitting Frequencies	***Required by CDR***
Black Powder Mass Drogue Chute (grams)	3.5
Black Powder Mass Main Chute (grams)	3.5

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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 The payload will test the effect that the rocket's flight nand acceleration have on the planaria's ability to regenerate
Payload 2	Overview N/A

Test Plans, Status, and Results	
Ejection Charge Tests	Each ejection charge will be 3.5 g of black powder. These charges will eject both our main and drouge parachutes through the seperation of the launch vehicle. These ejections are triggered by altimeters.
Sub-scale Test Flights	Subscale flight is scheduled for November 2015
Full-scale Test Flights	N/A

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Additional Comments
-Section 1(Nose Cone) Section 2(E-Bay and front body tube section) -Section 3(Rear body tube section including fins and motor casing)