Milestone Review Flysheet

Please see Milestone Review Flysheet Instructions.

Institution	Arizona State University

Milestone	Critical Design Review

Vehicle Properties	
Total Length (in)	103
Diameter (in)	4.01
Gross Lift Off Weight (lb)	13.8
Airframe Material	BlueTube 2.0
Fin Material	3/16" Birch Plywood
Drag	

Motor Properties	
Motor Manufacturer(s)	Aerotech
Motor Designation(s)	J800T
Max/Average Thrust (lb)	177.71
Total Impulse (lbf-sec)	284.3
Mass (before, after burn)	2.5lb/1.19lb
Liftoff Thrust (lb)	282.28lb

Stability Analysis	
Center of Pressure (in from nose)	63.088
Center of Gravity (in from nose)	55.057
Static Stability Margin	1.98
Thrust-to-Weight Ratio	12.87
Rail Size (in)/ Length (in)	1.5/120
Rail Exit Velocity (ft/s)	108

Ascent Analysis		
Maximum Velocity (ft/s)	605	
Maximum Mach Number	0.625	
Maximum Acceleration (ft/s^2)	614.5	
Target Apogee (1st Stage if Multiple Stages)	3000	
Stable Velocity (ft/s)		
Distance to Stable Velocity (ft)		

Recovery System Properties				
Drogue Parachute				
Manufacturer/Model		Public Missiles		
Size		18"		
Altitude at Deployment (ft)			Apogee	
Velocity at Deployment (ft/s)			0	
Terminal Velocity (ft/s)			88.4	
Recovery Harness Material			1/2" Tubular Kevlar	
Harness Size/Thickness (in)			1/2"	
Recovery Harness Length (ft)			31.25	
Harness/Airframe Interfaces		E-bay bulkhead U-bolt to 1/4" quicklink to shockcord to quicklink to hardpoint adaptor		
Kinetic Energy of Each Section (ft-lbs)	Section 1	Section 2	Section 3	Section 4

Recovery System Properties				
Main Parachute				
Manufacturer/Model		Fruity Chutes		
Size		60"		
Altitude at Deployment (ft)			1000	
Velocity at Deployment (ft/s)			88.4	
Terminal Velocity (ft/s)			16.5	
Recovery Harness Material			1/2" Tubular Kevlar	
Harness Size/Thickness (in)			1/2"	
Recovery Harness Length (ft)			13.5	
		lt to 1/4" quicklink to shockcord to parachute		
Kinetic Energy of Each Section (ft-lbs)	Section 1	Section 2	Section 3	Section 4
	30.6	4.75		

Recovery Electronics	
Altimeter(s)/Timer(s) (Make/Model)	PerfectFlite Stratologger/MissileWorks RRC3
Redundancy Plan	Dual redundant altimeters on separate circuits.
Pad Stay Time (Launch Configuration)	120 minutes

Recovery Electronics	
Rocket Locators (Make/Model)	Eggfinder GPS
Transmitting Frequencies	100mW 900MHz
Black Powder Mass Drogue Chute (grams)	2.1
Black Powder Mass Main Chute (grams)	1.26

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Autonomous Ground Support Equipment (AGSE)	
Capture Mechanism	Overview: Mechanical claw on a 5-axis arm. Camera next to claw for target acquisition, similar to MAHLI on Curiosity.
Container Mechanism	Overview: Dual payload bay doors that open with a lever=type catch mechanism that effectively closes off bay when doors are open. When the sample is dropped in this causes the doors to close (similar to mail post box).
Launch Rail Mechanism	Overview: 1545 Rail, counterbalanced, with dual servo motors for redundancy attached to to opposing tower structures of our launch platform. When raised, the motors will lock in place.
Igniter Installation Mechanism	Overview:
CG Location of Launch Pad (in inches) When Rail is Horizontal (Use Base of Rail as the Reference Point)	
Moment Analysis	36 inches from base of rail.

Payload	
Payload 1	Overview:
Payload 2	Overview:

Test Plans, Status, and Results	
Ejection Charge Tests	To be conducted with a full scale model.
Sub-scale Test Flights	To be conducted by Dec 13.

Full-scale Test Flights	

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Institution		**Milestone**	

Additional Comments