Milestone Review Flysheet

Please see Milestone Review Flysheet Instructions.

Institution	University of central Florida	Milestone	FRR

First Stage (Both Stages Together or Single Stage)		Second Stage (If Applicable)	
Vehicle Properties		**Vehicle Properties**	
Total Length (in)	79.25	Total Length (in)	
Diameter (in)	4	Diameter (in)	
Gross Lift Off Weight (lb)	11.25	Gross Weight (lb)	
Airframe Material	Blue Tube	Airframe Material	
Fin Material	Fiberglass	Fin Material	
Motor Properties		**Motor Properties**	
Motor Manufacturer(s)	Cesaroni	Motor Manufacturer(s)	
Motor Designation(s)	J355RL	Motor Designation(s)	
Max/Average Thrust (lb)	434.3 /355	Max/Average Thrust (lb)	
Total Impulse (lbf-sec)	267	Total Impulse (lbf-sec)	
Stability Analysis		Ignition Altitude (ft)	
Center of Pressure (in from nose)	65.7	Ignition Timing (From 1st Stage Burnout)	
Center of Gravity (in from nose)	54	Igniter Location	
Static Stability Margin	2.87	**Stability Analysis**	
Thrust-to-Weight Ratio	7.35:1	Center of Pressure (in from nose)	
Rail Size (in)	1	Center of Gravity (in from nose)	
Rail Length (in)	120	Static Stability Margin	
Rail Exit Velocity (ft/s)	68	Thrust-to-Weight Ratio	
Ascent Analysis		**Ascent Analysis**	
Maximum Velocity (ft/s)	600	Maximum Velocity (ft/s)	
Maximum Mach Number	0.54	Maximum Mach Number	
Maximum Acceleration (ft/s^2)	250	Maximum Acceleration (ft/s)	
Target Apogee (1st Stage if Multiple Stages)	3000	Target Apogee (ft)	
Recovery System Properties		**Recovery System Properties**	
Drogue Parachute		**Drogue Parachute**	
Configuration	X-Form	Configuration	
Size	36 inch diameter	Size	
Deployment Velocity (ft/s)	0	Deployment Velocity (ft/s)	
Terminal Velocity (ft/s)	48	Terminal Velocity (ft/s)	
Fabric Type	Rip-Stop Nylon	Fabric Type	
Shroud Line Material	Nylon Cord	Shroud Line Material	
Shroud Line Length (in)	42	Shroud Line Length (in)	
Thread Type	Dual Coats Outdoor	Thread Type	
Seam Type	Zig-Zag Double Seam	Seam Type	
Recovery Harness Type	1" Kevlar	Recovery Harness Type	
Recovery Harness Length (ft)	15	Recovery Harness Length (ft)	
Harness/Airframe Interface	barrel swivels/I-bolts	Harness/Airframe Interface	
Main Parachute		**Main Parachute**	
Configuration	Circular	Configuration	circular (Payload Chute)
Size	70 inch diameter	Size	28
Deployment Velocity (ft/s)	36	Deployment Velocity (ft/s)	41
Terminal Velocity (ft/s)	16.5	Terminal Velocity (ft/s)	23.5
Fabric Type	Rip-Stop Nylon	Fabric Type	Rip-Stop Nylon
Shroud Line Material	Nylon Cord	Shroud Line Material	Nylon Cord
Shroud Line Length (in)	72	Shroud Line Length (in)	36
Thread Type	Dual Coats Outdoor	Thread Type	Dual Coats Outdoor
Seam Type	Zig-Zag Double Seam	Seam Type	Zig-Zag Double Seam
Recovery Harness Type	1" Kevlar	Recovery Harness Type	1" Kevlar
Recovery Harness Length (ft)	15	Recovery Harness Length (ft)	12
Harness/Airframe Interface	barrel swivels/I-bolts	Harness/Airframe Interface	Stainless Steel Quick Links

Kinetic Energy of Each Section (ft-lbs)	Section 1	Section 2
	394	26.8

Kinetic Energy of Each Section (ft-lbs)	Section 1	Section 2
	17.6	

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First Stage (or Single Stage)		Second Stage (If Applicable)	
Recovery System Properties		**Recovery System Properties**	
Altimeter(s)/Timer(s) (Make/Model)	Perfect Flight StratoLogger	Altimeter(s)/Timer(s) Make/Model	
	Perfect Flight StratoLogger		
	Aim Extra		
Transmitters (Model-Frequency-Power)	Aim Extra Base	Locators/Frequencies (Model-Frequency-Power)	
Black Powder Charge Size Drogue Parachute (grams)	2	Black Powder Charge Size Drogue Parachute (grams)	2 (payload chute)
Black Powder Charge Size Main Parachute (grams)	2	Black Powder Charge Size Main Parachute (grams)	

Payloads

Mandatory Payload 3.1	Overview Raspberry Pi interfaced with camera module, using OpenCV libraries to do object detection. Drogue deployment at apogee, payload Ejection at 1,000 ft, main deployment at 3,000 ft.
Optional Payload 1	Overview
Optional Payload 2	Overview

Test Plans, Status, and Results

Ejection	Ground based ejection charge testing showed 2 grams of black powder per parachute to be the optimal amount to guarantee deployment. The full scale launch proved this to be true as well.
Flights	Subscale flight test went perfect. Target altitude was very close to exact. All parachutes deployed at intended altitudes.
Flights	Full scale test flight went perfect as well. Full scale was built almost exactly like the subscale just scaled up. All parachutes deployed at intended altitudes.

Additional Comments