Milestone Review Flysheet 2017-2018

Institution	AIAA OC Section	Milestone	CDR

Vehicle Properties

Total Length (in)	80
Diameter (in)	4
Gross Lift Off Weigh (lb.)	25.4
Airframe Material(s)	Fiberglass
Fin Material and Thickness (in)	Fiberglass
Coupler Length/Shoulder Length(s) (in)	Minimum is 4"

Motor Properties

Motor Brand/Designation	Cesaroni K661
Max/Average Thrust (lb.)	170.43/144.21
Total Impulse (lbf-s)	547.75
Mass Before/After Burn (lb.)	5.57/2.28
Liftoff Thrust (lb.)	144.21
Motor Retention Method	Aero Pack 75 mm Retainer

Stability Analysis

Center of Pressure (in from nose)	105.3845
Center of Gravity (in from nose)	74.5915
Static Stability Margin (on pad)	7.65
Static Stability Margin (at rail exit)	9.56
Thrust-to-Weight Ratio	5.5 : 1
Rail Size/Type and Length (in)	96
Rail Exit Velocity (ft/s)	49.31

Ascent Analysis

Maximum Velocity (ft/s)	589.23
Maximum Mach Number	0.64
Maximum Acceleration (ft/s^2)	616.52
Predicted Apogee (From Sim.) (ft)	5348.26

Recovery System Properties
Drogue Parachute

Manufacturer/Model	Fruity Chutes
Size/Diameter (in or ft)	18
Altitude at Deployment (ft)	Apogee
Velocity at Deployment (ft/s)	16.54
Terminal Velocity (ft/s)	85.81
Recovery Harness Material	Tubular Nylon
Recovery Harness Size/Thickness (in)	1/0.0071
Recovery Harness Length (ft)	25
Harness/Airframe Interfaces	machine-closed stainless steel eye bolts, tubular nyon shock cord

Kinetic Energy of Each Section (Ft-lbs)	Section 1	Section 2	Section 3	Section 4
	422.47	332.43	846.67	926.5

Recovery System Properties
Main Parachute

Manufacturer/Model	Fruity Chutes
Size/Diameter (in or ft)	60"
Altitude at Deployment (ft)	700
Velocity at Deployment (ft/s)	116
Terminal Velocity (ft/s)	21.04
Recovery Harness Material	Tubular Nylon
Recovery Harness Size/Thickness (in)	1/0.0071
Recovery Harness Length (ft)	25
Harness/Airframe Interfaces	machine-closed stainless steel eye bolts, tubular nyon shock cord

Kinetic Energy of Each Section (Ft-lbs)	Section 1	Section 2	Section 3	Section 4
	25.45	20.02	51	55.81

Recovery Electronics

Altimeter(s)/Timer(s) (Make/Model)	Stratologger CF Flight Computer/RRC3 Flight Computer
Redundancy Plan and Backup Deployment Settings	use of primary and secondary flight comoputer, both different models; independent batteries
Pad Stay Time (Launch Configuration)	Approximately 1 hour

Recovery Electronics

Rocket Locators (Make/Model)	What is the RF for Whistle? 900 mHz from cell tower?
Transmitting Frequencies (all - vehicle and payload)	436.92 mHz controlled by Brenda, KM6AJD (Call Sign) 2.4-2.835 GHz by RC DX8; 900 mHz Whistle GPS; 850 MHz 1000 MHz

ection System Energetics (ex. Black Powder		
Energetics Mass - Drogue Chute (grams)	Primary	3.2
	Backup	5
Energetics Mass - Main Chute (grams)	Primary	4.5
	Backup	5.5
Energetics Masses - Other (grams) - If Applicable	Primary	
	Backup	

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Payload

	Overview
Payload 1 (official payload)	Unmanned Aerial Vehicle that applies the Magnus Effect; will first have autonomous control, with RC control as a backup.
Payload 2 (non-scored payload)	

Test Plans, Status, and Results

Ejection Charge Tests	Both tested, with success. Some problems with unravelling drogue chute, but otherwise illustrated we had a sufficient mass for gunpowder. Backup charges for the primary and druge chute bodies were 40% larger in mass.
Sub-scale Test Flights	1623 ft apogee; successful duel deployment noted
Full-scale Test Flights	Will be completed by FRR

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Additional Comments

nt of the UAV is to glide. It will not be able to generate enough lift to go upward. It only has enough lift to fall at a contro