Milestone Review Flysheet

Institution	Piedmont Virginia Community College

Milestone	PDR

Vehicle Properties	
Total Length (in)	98
Diameter (in)	5.5
Gross Lift Off Weigh (lb)	27.51
Airframe Material	Fiberglass
Fin Material	Fiberglass
Coupler Length	12 in

Motor Properties	
Motor Designation	Kosdon by AeroTech L1400F
Max/Average Thrust (lb)	447/314
Total Impulse (lbf-s)	593
Mass Before/After Burn	5.5/2.75
Liftoff Thrust (lb)	447
Motor Retention	Screw-on Retainer

Stability Analysis	
Center of Pressure (in from nose)	72.54
Center of Gravity (in from nose)	54.39
Static Stability Margin	3.3
Static Stability Margin (off launch rail)	3.8
Thrust-to-Weight Ratio	16.25
Rail Size and Length (in)	1515 X 144
Rail Exit Velocity	90 ft/s

Ascent Analysis		
Maximum Velocity (ft/s)	650	
Maximum Mach Number	0.55	
Maximum Acceleration (ft/s^2)	517	
Target Apogee (From Simulations)	5284 ft	
Stable Velocity (ft/s)	43	
Distance to Stable Velocity (ft)	2.9	

Recovery System Properties				
Drogue Parachute				
Manufacturer/Model	Madcow Rocketry/Nylon chute 30"			
Size	30 in			
Altitude at Deployment (ft)	5284			
Velocity at Deployment (ft/s)	13.5			
Terminal Velocity (ft/s)	62			
Recovery Harness Material	Kevlar			
Harness Size/Thickness (in)	1			
Recovery Harness Length (ft)	25			
Harness/Airframe Interfaces	Two U-bolts on each end of the recovery harness that attach to it independently.			
Kinetic Energy of Each Section (Ft-lbs)	Section 1	Section 2	Section 3	Section 4
	680	588	444	N/A

Recovery System Properties				
Main Parachute				
Manufacturer/Model	Fruity Chutes/84" Iris Ultra Parachute			
Size	84 in			
Altitude at Deployment (ft)	500			
Velocity at Deployment (ft/s)	62			
Terminal Velocity (ft/s)	17			
Recovery Harness Material	Kevlar			
Harness Size/Thickness (in)	1			
Recovery Harness Length (ft)	25			
Harness/Airframe Interfaces	Two U-bolts on each end of the recovery harness that attach to it independently.			
Kinetic Energy of Each Section (Ft-lbs)	Section 1	Section 2	Section 3	Section 4
	48	23	32	N/A

Recovery Electronics	
Altimeter(s)/Timer(s) (Make/Model)	Missile Works/RRC3 "Sport" Altimeter
Redundancy Plan	Use two altimeters with separate batteries. Use separate ejection charges for each altimeter.
Pad Stay Time (Launch Configuration)	15+ hours

Recovery Electronics	
Rocket Locators (Make/Model)	Adafruit/Adafruit Ultimate GPS Breakout
Transmitting Frequencies	900 MHz
Black Powder Mass Drogue Chute (grams)	1.3
Black Powder Mass Main Chute (grams)	1.8

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Autonomous Ground Support Equipment (MAV Teams Only)	
Capture Mechanism	Overview
Container Mechanism	Overview
Launch Rail Mechanism	Overview
	Include Description of rail locking mechanism
Igniter Installation Mechanism	Overview

Payload	
Payload 1	Overview
	Roll induction and counter roll. After motor burnout, the rocket will roll twice about its long axis. While rolling, it will use a camera to detect the ground targets from the target identification challenge. After it has completed two rolls, it will roll to aim a camera at one or more of the ground targets. After that, the rocket will return to whatever roll it had after motor burnout.
Payload 2	Overview

Test Plans, Status, and Results	
Ejection Charge Tests	The ejection charge test will occur around February 13th, when the full-scale rocket is complete enough to test. The sub-scale ejection charge test will take place around November 26th, when it is completed enough to test.
Sub-scale Test Flights	The sub-scale test flight will take place around December 10th, depending on when the NAR sections that the team is working with have launches. The sub-scale construction will take place from November 14th through November 26th. The sub-scale design will happen from November 4th through November 12th.
Full-scale Test Flights	The full-scale test flight will occur in mid to late February, depending on when the NAR sections that the team is working with have launches; neither of them have posted schedules that far in advance. The full-scale construction will take place from February 1st through February 16th. The full-scale design will continue until December 16th.

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Additional Comments