Milestone Review Flysheet 2020-2021

Institution	piedmont virgnia communty college

Milestone	CDR

Vehicle Properties

total length (in)	49.84
Diameter (in)	2.67
Gross Lift Off Weigh (lb)	1.57
Airframe Material(s)	kraft phenolic
Fin Material and Thickness (in)	plywood, 0.1625
Coupler Length(s)/Shoulder Length(s) (in)	5.63/2.8

Motor Properties

Motor Brand/Designation	Aerotech, F42
Max/Average Thrust (lb)	14.84/9.67
Total Impulse (lbf-s)	52.93
Mass Before/After Burn (lb)	1.57 / 1.25
Liftoff Thrust (lb)	9.67
Motor Retention Method	Aeropack retainer

Stability Analysis

Center of Pressure (in. from nose)	40.37
Center of Gravity (in. from nose)	34.67
Static Stability Margin (on pad)	2.13
Static Stability Margin (at rail exit)	5.13
Thrust-to-Weight Ratio	5.1:1
Rail Size/Type and Length (in)	1515/ 60in
Rail Exit Velocity (ft/s)	1.46

Ascent Analysis

Maximum Velocity (ft/s)	209
Maximum Mach Number	0.13
Maximum Acceleration (ft/s^2)	198
Target Apogee (ft)	4,200
Predicted Apogee (From Sim.) (ft)	4,200

Recovery System Properties - Overall

Total Descent Time (s)	20
Total Drift in 20 mph winds (ft)	2482/2452

Recovery System Properties - Energetics

Ejection System Energetics (ex. Black Powder		black powder
Energetics Mass - Drogue Chute (grams)	Primary	5.5
	Backup	6
Energetics Mass - Main Chute (grams)	Primary	7.5
	Backup	8
Energetics Mass - Other (grams) - If Applicable	Primary	
	Backup	

Payload Deployment

Location: Air or Ground (if applicable)	air
Altitude of Deployment (if applicable)	700

Recovery System Properties - Recovery Electronics

Primary Altimeter Make/Model	missile works/RRC3
Secondary Altimeter Make/Model	missile works/RRC3
Other Altimeters (if applicable)	n/a
Rocket Locator (Make/Model)	adafruit ultimate
Additional Locators (if applicable)	eggfinger
Transmitting Frequencies (all - vehicle and payload)	***Required by CDR*** (Complete on pages 3 and 4)
Pad Stay Time (Launch Configuration)	15+ hours
Describe Redundancy Plan (batteries, switches, etc.)	

Recovery System Properties - Drogue Parachute

Manufacturer/Model			frulty	
Size or Diameter (in)			24	
Main Altimeter Deployment Setting			600	
Backup Altimeter Deployment Setting			500	
Velocity at Deployment (ft/s)			0	
Terminal Velocity (ft/s)			149	
Recovery Harness Material, Size, and Type (examples - 1/2 in. tubular Nylon or 1 in. flat Kevlar strap)			3/4" tubular kevlar	
Recovery Harness Length (ft)			12	
Harness/Airframe Interfaces		Dual U-Bolts		
Kinetic Energy (Ft-lbs)	Section 1	Section 2	Section 3	Section 4
	41	90		

Recovery System Properties - Main Parachute

Manufacturer/Model			frulty	
Size or Diameter (in or ft)			84in.(booster), 48in(payload	
Main Altimeter Deployment Setting (ft)			Apogee	
Backup Altimeter Deployment Setting (ft)			apogee +2 seconds	
Velocity at Deployment (ft/s)			0	
Terminal Velocity (ft/s)			13.1/13.3	
Recovery Harness Material, Size, and Type (examples - 1/2 in. tubular Nylon or 1 in. flat Kevlar strap)			3/4'' tubular kevlar	
Recovery Harness Length (ft)			12 ft (booster) 6ft (payload)	
Harness/Airframe Interfaces		Dual U-Bolts		
Kinetic Energy (Ft-lbs)	Section 1	Section 2	Section 3	Section 4
	46	51.2		

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Payload	
Payload 1 (official payload)	Overview
	a lander that can stable it's self and take a 360 degree picture around it
Payload 2 (non-scored payload)	Overview

Test Plans, Status, and Results	
test flight	the team will do a test flight after we make a subscale of the rocket
test flight	the team flew our sub scale on jan 3rd and it went great

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Transmitter #1

Location of transmitter:	Avionics bay		
Purpose of transmitter:	GPS tracking of the booster section		
Brand	eggfinder	RF Output Power (mW)	100
Model		Specific Frequency used by team (MHz)	919
Handshake or frequency hopping? (explain)	no		
Distance to closest e-match or altimeter (in)	3.75 in. to altimeter		
Description of shielding plan:			

Transmitter #2			
Location of transmitter:	nosecone		
Purpose of transmitter:	GPS tracking of the nosecone		
Brand	lumener	RF Output Power (mW)	200
Model	TX5G2R	Specific Frequency used by team (MHz)	5800
Handshake or frequency hopping? (explain)	no		
Distance to closest e-match or altimeter (in)	55 in.		
Description of shielding plan:			

Transmitter #3			
Location of transmitter:			
Purpose of transmitter:			
Brand		RF Output Power (mW)	
Model		Specific Frequency used by team (MHz)	
Handshake or frequency hopping? (explain)			
Distance to closest e-match or altimeter (in)			
Description of shielding plan:			

Transmitter #4			
Location of transmitter:			
Purpose of transmitter:			
Brand		RF Output Power (mW)	
Model		Specific Frequency used by team (MHz)	
Handshake or frequency hopping? (explain)			
Distance to closest e-match or altimeter (in)			
Description of shielding plan:			

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Transmitter #5			
Location of transmitter:			
Purpose of transmitter:			
Brand		RF Output Power (mW)	

Model		Specific Frequency used by team (MHz)	
Handshake or frequency hopping? (explain)			
Distance to closest e-match or altimeter (in)			
Description of shielding plan:			

Transmitter #6			
Location of transmitter:			
Purpose of transmitter:			
Brand		RF Output Power (mW)	
Model		Specific Frequency used by team (MHz)	
Handshake or frequency hopping? (explain)			
Distance to closest e-match or altimeter (in)			
Description of shielding plan:			

Additional Comments