

Milestone Review Flysheet 2020-2021

Institution piedmont virginia communy college

Milestone PDR

Vehicle Properties	
Total Length (in)	126
Diameter (in)	6
Gross Lift Off Weigh (lb)	24.5
Airframe Material(s)	Fiberglass
Fin Material and Thickness (in)	Plywood, 0.375
Coupler Length(s)/Shoulder Length(s) (in)	6/6.17

Motor Properties	
Motor Brand/Designation	Aerotech, L1150R
Max/Average Thrust (lb)	302.59/258.53
Total Impulse (lbf-s)	790.65
Mass Before/After Burn (lb)	8.1 / 3.3
Liftoff Thrust (lb)	300
Motor Retention Method	Aeropack retainer

Stability Analysis	
Center of Pressure (in. from nose)	103
Center of Gravity (in. from nose)	80.94
Static Stability Margin (on pad)	3.35
Static Stability Margin (at rail exit)	3.47
Thrust-to-Weight Ratio	5.1:1
Rail Size/Type and Length (in)	1515/ 144in
Rail Exit Velocity (ft/s)	60.3

Ascent Analysis	
Maximum Velocity (ft/s)	400.1
Maximum Mach Number	0.335
Maximum Acceleration (ft/s^2)	642.2
Target Apogee (ft)	4,200
Predicted Apogee (From Sim.) (ft)	4,800

Recovery System Properties - Overall	
Total Descent Time (s)	52
Total Drift in 20 mph winds (ft)	2426/2702

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	fruity			
Size or Diameter (in)	18			
Main Altimeter Deployment Setting	700			
Backup Altimeter Deployment Setting	600			
Velocity at Deployment (ft/s)	0			
Terminal Velocity (ft/s)	155			
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
	1050	814		

Recovery System Properties - Main Parachute				
Manufacturer/Model	fruity			
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	Do a test flight after making a subscale of the rocket

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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