

Milestone Review Flysheet

PDR, CDR, FRR

Institution Name	Spring Grove Area High School
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Milestone	PDR
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Vehicle Properties	
Diameter (in)	ID: 3.90 in / OD: 4.094 in
Length (in)	81.95 in
Gross Liftoff Weight (lb)	10.71 lb
Launch Lug/button Size	1.5 in for a 1515 rail
Motor Retention	54mm AeroPack Retainer - P

Motor Properties	
Motor Manufacturer	Cesaroni
Motor Designation	Pro 54 K2045 Vmax
Max/Average Thrust (N/lb)	2184 N / 1996 N
Total Impulse (N-sec/lb-sec)	1417 N-sec
Mass pre/post Burn (lb)	2.84 lb / 1.26 lb

Stability Analysis	
Center of Pressure (in from nose)	68.411 in
Center of Gravity (in from nose)	58.131 in
Static Stability Margin	2.51
Thrust-to-Weight Ratio	43.08
Rail Size (in) / Length (in)	1.5 in / 96 in

Ascent Analysis	
Rail Exit Velocity (ft/s)	148 ft/s
Max Velocity (ft/s)	965 ft/s
Max Mach Number	0.85
Max Acceleration (ft/s ²)	1504 ft/s ²
Peak Altitude (ft)	5279 ft

Recovery System Properties				
Drogue Parachute				
Manufacturer/Model		Fruity Chutes/DEC-15		
Size		15 in		
Altitude at Deployment (ft)		5279 ft		
Velocity at Deployment (ft/s)		0 ft/s		
Terminal Velocity (ft/s)		92.1 ft/s		
Recovery Harness Material		Tubular Nylon		
Harness Size/Thickness (in)		1 in		
Recovery Harness Length (ft)		20 ft		
Harness/Airframe Interfaces		The parachute is connected to the shock cord with a swivel. The shock cord connects to a quick link and an eyebolt in a 3/4 inch bulkhead.		
Kinetic Energy During Descent (ft-lb)	Section 1	Section 2	Section 3	Section 4
	486 ft-lb	100 ft-lb	607 ft-lb	N/A

Recovery System Properties				
Main Parachute				
Manufacturer/Model		Fruity Chutes/IFC-72		
Size		72 in		
Altitude at Deployment (ft)		600 ft		
Velocity at Deployment (ft/s)		92.1 ft/s		
Landing Velocity (ft/s)		19.1 ft/s		
Recovery Harness Material		Tubular Nylon		
Harness Size/Thickness (in)		1 in		
Recovery Harness Length (ft)		25 foot		
Harness/Airframe Interfaces		The parachute is connected to the shock cord with a swivel. The shock cord connects to a quick link and an eyebolt in a 2 inch bulkhead.		
Kinetic Energy Upon Landing (ft-lb)	Section 1	Section 2	Section 3	Section 4
	15.8 ft-lb	5.5 ft-lb	25.8 ft-lb	6.2 ft-lb

Recovery System Properties				
Electronics/Ejection				
Altimeter(s) Make/Model		Perfect Flight / Stratologger		
Redundancy Plan		Using two altimeters with two ejection charges for each altimeter. One altimeter will have a slight delay from ejections from the other altimeter.		
Pad Stay Time (Launch Configuration)		Each altimeter can stay in its launch configuration for weeks at a time.		

Recovery System Properties				
Electronics/Ejection				
Rocket Locators (Make, Model)		To be determined		
Transmitting Frequencies		***Required by CDR*** To be determined		
Black Power Mass Drogue Parachute (gram)		.097 grams		
Black Power Mass Main Parachute (gram)		.097 grams		

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Milestone PDR

Payload/Science

Succinct Overview of Payload/Science Experiment	The payload will measure current produced during its descent from apogee and record data so that it can be compared to the current produced by the solar array at ground level.
Identify Major Components	Lucite cylinder to protect solar panel, electronics bay housing, rollable solar panel, current data logger, 9 volt battery as power supply
Mass of Payload/Science	14.836 oz.

Test Plan Schedule/Status

Ejection Charge Test(s)	Ematch solution received. The igniters will be tested once they're dry. Black powder will be tested for the ejection charges once the igniters have been tested.
Sub-scale Test Flights	Manufactures have been selected for materials. Launch locations have been determined. Materials need to be ordered.
Full-scale Test Flights	Manufactures have been selected for materials. Launching locations have been determined. Materials need to be ordered.

Additional Comments

Need to research more reliable tracking devices. Previously researched tracking devices were found to be unreliable.