

Milestone Review Flysheet 2017-2018

Institution University of Florida

Milestone PDR

Vehicle Properties	
Total Length (in)	102
Diameter (in)	4.024
Gross Lift Off Weigh (lb.)	17.8
Airframe Material(s)	Carbon Fiber and Fiberglass
Fin Material and Thickness (in)	Carbon Fiber and Fiberglass
Coupler Length/Shoulder Length(s) (in)	8 in.

Motor Properties	
Motor Brand/Designation	Class K Cesaroni K635-RL
Max/Average Thrust (lb.)	175.06/143.27
Total Impulse (lbf-s)	448.35
Mass Before/After Burn (lb.)	3.9/1.43 lbm
Liftoff Thrust (lb.)	142.1
Motor Retention Method	Aero Pack 54mm Retainer

Stability Analysis	
Center of Pressure (in from nose)	76.343
Center of Gravity (in from nose)	62.374
Static Stability Margin (on pad)	3.47
Static Stability Margin (at rail exit)	2.1
Thrust-to-Weight Ratio	Max: 9.8 Avg: 8.0
Rail Size/Type and Length (in)	144
Rail Exit Velocity (ft/s)	55.1 ft/s

Ascent Analysis	
Maximum Velocity (ft/s)	700
Maximum Mach Number	0.62
Maximum Acceleration (ft/s ²)	282
Predicted Apogee (From Sim.) (ft)	5880 ft

Recovery System Properties									
Drogue Parachute									
Manufacturer/Model	Fruity Chutes/CFC-12								
Size/Diameter (in or ft)	36 in.								
Altitude at Deployment (ft)	5280 (Apogee)								
Velocity at Deployment (ft/s)	0								
Terminal Velocity (ft/s)	42.28								
Recovery Harness Material	Kevlar								
Recovery Harness Size/Thickness (in)	0.5								
Recovery Harness Length (ft)	240								
Harness/Airframe Interfaces	Eye-bolts/swivel links								
Kinetic Energy of Each Section (Ft-lbs)	<table border="1" style="width: 100%; text-align: center;"> <tr> <th>Section 1</th> <th>Section 2</th> <th>Section 3</th> <th>Section 4</th> </tr> <tr> <td>273.69</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> </tr> </table>	Section 1	Section 2	Section 3	Section 4	273.69	N/A	N/A	N/A
Section 1	Section 2	Section 3	Section 4						
273.69	N/A	N/A	N/A						

Recovery System Properties									
Main Parachute - Aft									
Manufacturer/Model	Fruity Chutes/CFC-15								
Size/Diameter (in or ft)	48 in.								
Altitude at Deployment (ft)	600								
Velocity at Deployment (ft/s)	42.28								
Terminal Velocity (ft/s)	31.71								
Recovery Harness Material	Kevlar								
Recovery Harness Size/Thickness (in)	0.5								
Recovery Harness Length (ft)	300								
Harness/Airframe Interfaces	Eye-Bolts/swivel links								
Kinetic Energy of Each Section (Ft-lbs)	<table border="1" style="width: 100%; text-align: center;"> <tr> <th>Section 1</th> <th>Section 2</th> <th>Section 3</th> <th>Section 4</th> </tr> <tr> <td>58.54</td> <td></td> <td></td> <td></td> </tr> </table>	Section 1	Section 2	Section 3	Section 4	58.54			
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Recovery Electronics	
Altimeter(s)/Timer(s) (Make/Model)	Stratologger CF Altimeter
Redundancy Plan and Backup Deployment Settings	Two altimeters will be used with delayed charges in case of separation failure
Pad Stay Time (Launch Configuration)	3 hours

Recovery Electronics		
Rocket Locators (Make/Model)	Big Red Bee BRB900	
Transmitting Frequencies (all vehicle and payload)	900 Mghz	
Ejection System Energetics (ex. Black Powder)	Black Powder	
Energetics Mass - Drogue Chute (grams)	Primary	2
	Backup	2
Energetics Mass - Main Chute (grams)	Primary	2
	Backup	2
Energetics Masses - On board payload - nosecone (grams)	Primary	1
	Backup	1

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Payload

Payload	
Payload 1 (official payload)	Overview
	The selected payload will be a target detection system. The payload will be a separate piece from the rest of the rocket from apogee. At apogee, the forward section (payload bay and nose cone) will separate from the aft section by means of a black powder charge. Now independent, the forward section will then separate at the nose cone and utilize a 12 inch parachute with a spill hole to slow descent and aid in stability. The nose cone and body section of the payload will be both be tethered to this chute. This chute will deploy at apogee.
Payload 2 (non-scored payload)	Overview
	N/A

Test Plans, Status, and Results

Ejection Charge Tests	An ejection charge test is scheduled preceding each launch.
Sub-scale Test Flights	A subscale flight test is scheduled for December 9th
Full-scale Test Flights	A fullscale flight test is scheduled for February 11th.

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Additional Comments