

Milestone Review Flysheet 2017-2018

Institution University of South Florida

Milestone PDR

Vehicle Properties	
Total Length (in)	93
Diameter (in)	5.148
Gross Lift Off Weight (lb.)	30.2
Airframe Material(s)	Fiberglass
Fin Material and Thickness (in)	1/8" Fiberglass
Coupler Length/Shoulder Length(s) (in)	12/5

Motor Properties	
Motor Brand/Designation	Cesaroni/L995
Max/Average Thrust (lb.)	287.05/214.08
Total Impulse (lbf-s)	813.36
Mass Before/After Burn (lb.)	7.92/4.22
Liftoff Thrust (lb.)	252.69
Motor Retention Method	Aeropak Retainer Ring/Front End of Motor

Stability Analysis	
Center of Pressure (in from nose)	79.793
Center of Gravity (in from nose)	64.158
Static Stability Margin (on pad)	3.04
Static Stability Margin (at rail exit)	3.07
Thrust-to-Weight Ratio	8.37
Rail Size/Type and Length (in)	1515/96
Rail Exit Velocity (ft/s)	65

Ascent Analysis	
Maximum Velocity (ft/s)	693.45
Maximum Mach Number	0.625
Maximum Acceleration (ft/s ²)	278.25
Predicted Apogee (From Sim.) (ft)	5298.56

Recovery System Properties									
Drogue Parachute									
Manufacturer/Model	SkyAngle CERT3								
Size/Diameter (in or ft)	Drogue								
Altitude at Deployment (ft)	5298.56								
Velocity at Deployment (ft/s)	-3.53								
Terminal Velocity (ft/s)	-82.75								
Recovery Harness Material	Tubula Kevlar								
Recovery Harness Size/Thickness (in)	1/2"								
Recovery Harness Length (ft)	30								
Harness/Airframe Interfaces	5/16" Zinc-Plated U-bolt, 5/16" locking quick link, parachute swivel								
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>217.98</td> <td>934.63</td> <td>135.04</td> <td>1084.55</td> </tr> </table>	Section 1	Section 2	Section 3	Section 4	217.98	934.63	135.04	1084.55
Section 1	Section 2	Section 3	Section 4						
217.98	934.63	135.04	1084.55						

Recovery System Properties				
Main Parachute				
Manufacturer/Model	SkyAngle CERT-3			
Size/Diameter (in or ft)	XL			
Altitude at Deployment (ft)	1000			
Velocity at Deployment (ft/s)	-78.34			
Terminal Velocity (ft/s)	-10.22			
Recovery Harness Material	Tubular Kevlar			
Recovery Harness Size/Thickness (in)	1/2"			
Recovery Harness Length (ft)	30			
Harness/Airframe Interfaces	5/16" Zinc-Plated U-bolt, 5/16" locking quick link, parachute swivel, Carbon Fiber Strengthened Marine Epoxy			
Kinetic Energy of Each Section (Ft-lbs)	Section 1	Section 2	Section 3	Section 4
	3.32	14.26	2.06	16.54

Recovery Electronics	
Altimeter(s)/Timer(s) (Make/Model)	Missileworks RRC3
Redundancy Plan and Backup Deployment Settings	The recovery system electrical circuits shall be completely independent of any payload electrical circuits. The recovery system shall contain redundant altimeters.
Pad Stay Time (Launch Configuration)	5-6 hours

Recovery Electronics	
Rocket Locators (Make/Model)	
Transmitting Frequencies (all - vehicle and payload)	***Required by CDR***
Ejection System Energetics (ex. Black Powder)	
Energetics Mass - Drogue Chute (grams)	Primary
	Backup
Energetics Mass - Main Chute (grams)	Primary
	Backup
Energetics Masses - Other (grams) - If Applicable	Primary
	Backup

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Payload

	Rover
Payload 1 (official payload)	Rover design: The sidewinder rover concept was born from the idea of maximizing the possible vehicle wheel diameter. This diameter at the time of this writing is the five-inch internal diameter of the rocket body. Rover design as enough room to meet and exceed mission requirements. If this space for instrumentation is not needed design is also easily shortened to reduce space and weight. Design allows for side loading into cargo section. That allows the rover wheels to be maximized to match inner diameter of rocket body. This is the largest solid wheel possible for this system. The design also incorporates Newtonian legs to improve traction of the two-wheeled system.
	N/A
Payload 2 (non-scored payload)	N/A

Test Plans, Status, and Results

Ejection Charge Tests	Tests have not been run yet
Sub-scale Test Flights	Tests have not been run yet
Full-scale Test Flights	Tests have not been run yet

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Additional Comments