

Milestone Review Flysheet

Institution

University of Alabama In Huntsville

Milestone

Preliminary Design Review

First Stage (Both Stages Together or Single Stage)					Second Stage (If Applicable)				
Vehicle Properties					Vehicle Properties				
Total Length (in)		122 in			Total Length (in)				
Diameter (in)		4.7 in			Diameter (in)				
Gross Lift Off Weight (lb)		29 lb			Gross Weight (lb)				
Airframe Material		Carbon Fiber			Airframe Material				
Fin Material		Carbon Fiber			Fin Material				
Motor Properties					Motor Properties				
Motor Manufacturer(s)		CTI			Motor Manufacturer(s)				
Motor Designation(s)		7312M4770-P VMAX			Motor Designation(s)				
Max/Average Thrust (lb)		1362/1073			Max/Average Thrust (lb)				
Total Impulse (lbf-sec)		1645			Total Impulse (lbf-sec)				
Stability Analysis					Stability Analysis				
Center of Pressure (in from nose)		90.5 in			Ignition Altitude (ft)				
Center of Gravity (in from nose)		83.5in			Ignition Timing (From 1st Stage Burnout)				
Static Stability Margin		1.5			Igniter Location				
Thrust-to-Weight Ratio		35.6			Stability Analysis				
Rail Size (in)		1.0 in unistrut			Center of Pressure (in from nose)				
Rail Length (in)		8 ft launch tower			Center of Gravity (in from nose)				
Rail Exit Velocity (ft/s)		130 ft/s			Static Stability Margin				
Ascent Analysis					Ascent Analysis				
Maximum Velocity (ft/s)		1960 ft/s			Maximum Velocity (ft/s)				
Maximum Mach Number		1.7			Maximum Mach Number				
Maximum Acceleration (ft/s^2)		1383 ft/s^2			Maximum Acceleration (ft/s)				
Target Apogee (1st Stage if Multiple Stages)		14,800 ft			Target Apogee (ft)				
Recovery System Properties					Recovery System Properties				
Drogue Parachute					Drogue Parachute				
Configuration		Round, Semi-Hemispherical			Configuration				
Size		12 inch diameter			Size				
Deployment Velocity (ft/s)		< 20 ft/s			Deployment Velocity (ft/s)				
Terminal Velocity (ft/s)		100 ft/s			Terminal Velocity (ft/s)				
Fabric Type		Ripstop Nylon			Fabric Type				
Shroud Line Material		Nylon Paratrooper Chord 500lb			Shroud Line Material				
Shroud Line Length (in)		36 in			Shroud Line Length (in)				
Thread Type		Not Determined			Thread Type				
Seam Type		Not Determined			Seam Type				
Recovery Harness Type		Not Determined			Recovery Harness Type				
Recovery Harness Length (ft)		Not Determined			Recovery Harness Length (ft)				
Harness/Airframe Interface		Not Determined			Harness/Airframe Interface				
Main Parachute					Main Parachute				
Configuration		Round, Semi-Hemispherical			Configuration				
Size		220 inch diameter			Size				
Deployment Velocity (ft/s)		100 ft/s			Deployment Velocity (ft/s)				
Terminal Velocity (ft/s)		7 ft/s			Terminal Velocity (ft/s)				
Fabric Type		Ripstop Nylon			Fabric Type				
Shroud Line Material		Nylon Paratrooper Chord 500lb			Shroud Line Material				
Shroud Line Length (in)		144 in			Shroud Line Length (in)				
Thread Type		Not Determined			Thread Type				
Seam Type		Not Determined			Seam Type				
Recovery Harness Type		Not Determined			Recovery Harness Type				
Recovery Harness Length (ft)		Not Determined			Recovery Harness Length (ft)				
Harness/Airframe Interface		Not Determined			Harness/Airframe Interface				
Kinetic Energy of Each Section (ft-lbs)	Section 1	Section 2	Section 3	Section 4	Kinetic Energy of Each Section (ft-lbs)	Section 1	Section 2	Section 3	Section 4
	Booster/ Body Tube	Nose Cone				Fin Can	Avionics Bay	Nose Cone	
	15.9	0.83							

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Recovery System Properties		Recovery System Properties	
Altimeter(s)/Timer(s) (Make/Model)	PerfectFlite SL-100 PerfectFlight miniTimer4	Altimeter(s)/Timer(s) Make/Model	
Locators/Frequencies (Model-Frequency-Power)	GPS Antenova M10382-AIUB (Locator) Xbee PRO XSC-S3B 900MHz (Transmitter)	Locators/Frequencies (Model-Frequency-Power)	
Black Powder Charge Size Drogue Parachute (grams)	Not Determined	Black Powder Charge Size Drogue Parachute (grams)	
Black Powder Charge Size Main Parachute (grams)	Not Determined	Black Powder Charge Size Main Parachute (grams)	

Payloads	
Mandatory Payload	Overview
3.1	Landing Hazard Detection System - A Video system with object detection algorithms to identify possible hazards in the landing area.
Optional Payload 1	Overview
3.3.1.1	Dielectrophoresis in Micro Gravity - Study of using Electric Fields to manipulate liquid fuels in micro gravity.
Optional Payload 2	Overview
3.3.2.1	Supersonic Effects on Vehicle Coatings - Apply different surface products to the vehicle airframe and to observe the effects of supersonic flight in a post flight analysis.

Test Plans, Status, and Results	
Ejection Charge Tests	Not Determined
Sub-scale Test Flights	Not Determined
Full-scale Test Flights	Not Determined

Additional Comments
Prometheus will feature a 4th payload in support of the NanoLaunch Project which includes a variety of gyroscopes, accelerometers, and pressure sensors to provide meaningful data in an attempt to characterize vehicle aerodynamic coefficients during transonic flight. The vehicle will have an induced pitched to determine pitching moment coefficient.