

Milestone Review Flysheet 2017-2018

Institution Boy Scout Troop 17

Milestone Sub Scale Flight - 12/16/2017

Vehicle Properties	
Total Length (in)	61.25
Diameter (in)	3.125
Gross Lift Off Weigh (lb.)	7.3
Airframe Material(s)	Fiber glass
Fin Material and Thickness (in)	Fiber glass .125
Coupler Length/Shoulder Length(s) (in)	Coupler 8 / Shoulder 4

Motor Properties	
Motor Brand/Designation	CTI I255
Max/Average Thrust (lb.)	70.5/67.3
Total Impulse (lbf-s)	115.9
Mass Before/After Burn (lb.)	8.4/7.9
Liftoff Thrust (lb.)	61.8
Motor Retention Method	54mm Aero Pack

Stability Analysis	
Center of Pressure (in from nose)	47.1
Center of Gravity (in from nose)	37.2
Static Stability Margin (on pad)	3.19
Static Stability Margin (at rail exit)	2.2
Thrust-to-Weight Ratio	9.7 max / 9.2 ave
Rail Size/Type and Length (in)	1010/120
Rail Exit Velocity (ft/s)	70

Ascent Analysis	
Maximum Velocity (ft/s)	263 - actual
Maximum Mach Number	0.34
Maximum Acceleration (ft/s^2)	NA
Predicted Apogee (From Sim.) (ft)	2169 - actual

Recovery System Properties				
Drogue Parachute				
Manufacturer/Model	Sky Angle Classic			
Size/Diameter (in or ft)	20 inch			
Altitude at Deployment (ft)	2169			
Velocity at Deployment (ft/s)	69.6			
Terminal Velocity (ft/s)	231			
Recovery Harness Material	Kevlar			
Recovery Harness Size/Thickness (in)	.25/.125			
Recovery Harness Length (ft)	25			
Harness/Airframe Interfaces	1/4 20 1" u-bolt/ 0.188 fiber glass lid / 1/4" oval quick link / 3 2-56 plastic bolt shear pins			
Kinetic Energy of Each Section (Ft-lbs)	Section 1	Section 2	Section 3	Section 4
	298	274		

Recovery System Properties				
Main Parachute				
Manufacturer/Model	Sky Angle Classic			
Size/Diameter (in or ft)	60 inch			
Altitude at Deployment (ft)	700			
Velocity at Deployment (ft/s)	46.3			
Terminal Velocity (ft/s)	21.6			
Recovery Harness Material	Kevlar			
Recovery Harness Size/Thickness (in)	.25/.125			
Recovery Harness Length (ft)	25			
Harness/Airframe Interfaces	1/4-20 1" u-bolt /0.188 fiber glass lid / 1/4" oval quick link / 3 2-56 plastic bolt shear pins			
Kinetic Energy of Each Section (Ft-lbs)	Section 1	Section 2	Section 3	Section 4
	10.6	16.6	28	

Recovery Electronics	
Altimeter(s)/Timer(s) (Make/Model)	Missle Works RRC3 and RRC2
Redundancy Plan and Backup Deployment Settings	Apogee - RRC3 primary RRC2 backup 1 second after apogee. Main - RRC3 @- 700 feet RRC2 backup @ 500 feet
Pad Stay Time (Launch Configuration)	4 hours

Recovery Electronics		
Rocket Locators (Make/Model)	Missle Works - RTx or T3	
Transmitting Frequencies (all - vehicle and payload)	***Required by CDR***	
Ejection System Energetics (ex. Black Powder)		
Energetics Mass - Drogue Chute (grams)	Primary	0.75
	Backup	1.50
Energetics Mass - Main Chute (grams)	Primary	2.25
	Backup	3.00
Energetics Masses - Other (grams) - If Applicable	Primary	
	Backup	

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Sub Scale Flight - 12/16/2017

Payload

Payload 1 (official payload)	Overview
	The experiment was included on the sub scale flight. Data was successfully recorded and analyzed.
Payload 2 (non- scored payload)	Overview

Test Plans, Status, and Results

Ejection Charge Tests	Drogue and main charge were tested to determine their sizes. In testing the main charge, it was noted there was a leak between the e-bay forward coupler and the air frame. A wrap of tape was added to the coupler and the charge size increased. A second main charge test with the revised charge size was successful.
Sub-scale Test Flights	The sub scale flight was conducted at the Tripoli Battle Park launch site. The flight was a total success with successful dual deployment and the recording of sensor data. The RRC2 reported an apogee of 2169' and the RRC2 reported an apogee of 2165'. The RTx GPS tracking worked as expected. A GPS track was created from the RTx GPS data.
Full-scale Test Flights	

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Additional Comments