

Milestone Review Flysheet 2017-2018

Institution Boy Scout Troop 17

Milestone FRR

Vehicle Properties

Total Length (in)	79.6
Diameter (in)	4.025
Gross Lift Off Weigh (lb.)	16.9
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	Aerotech K805
Max/Average Thrust (lb.)	203/180
Total Impulse (lbf-s)	396
Mass Before/After Burn (lb.)	16.9/14.9
Liftoff Thrust (lb.)	179.7
Motor Retention Method	54mm Aero Pack

Stability Analysis

Center of Pressure (in from nose)	61.25
Center of Gravity (in from nose)	48.5
Static Stability Margin (on pad)	3.65
Static Stability Margin (at rail exit)	4.5
Thrust-to-Weight Ratio	10.7 ave /12.6 max
Rail Size/Type and Length (in)	1010/120
Rail Exit Velocity (ft/s)	680

Ascent Analysis

Maximum Velocity (ft/s)	684
Maximum Mach Number	0.57
Maximum Acceleration (ft/s^2)	385
Predicted Apogee (From Sim.) (ft)	5278

Recovery System Properties

Drogue Parachute

Manufacturer/Model	Sky Angle Classic								
Size/Diameter (in or ft)	20 inch								
Altitude at Deployment (ft)	5279								
Velocity at Deployment (ft/s)	87								
Terminal Velocity (ft/s)	57								
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)	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 10%;">Section 1</th> <th style="width: 10%;">Section 2</th> <th style="width: 10%;">Section 3</th> <th style="width: 10%;">Section 4</th> </tr> <tr> <td style="text-align: center;">380</td> <td style="text-align: center;">402</td> <td></td> <td></td> </tr> </table>	Section 1	Section 2	Section 3	Section 4	380	402		
Section 1	Section 2	Section 3	Section 4						
380	402								

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)	57								
Terminal Velocity (ft/s)	18.2								
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								
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Recovery Electronics

Altimeter(s)/Timer(s) (Make/Model)	Missile Works RRC3 and RRC2
Redundancy Plan and Backup Deployment Settings	Apogee - RRC3 primary RRC2 backup - 1 second after apogee. Main - RRC3 @ - 500 feet RRC2 backup @ 300 feet
Pad Stay Time (Launch Configuration)	4 hours

Recovery Electronics

Rocket Locators (Make/Model)	Missile Works - RTx	
Transmitting Frequencies (all - vehicle and payload)	900 MHz ISM radio band (902-928 MHz). Radio Network Addressing is XBee Pro 900HP Preamble ID: 5, XBee Pro 900HP Network ID's:	
Ejection System Energetics (ex. Black Powder)	Black Powder	
Energetics Mass - Drogue Chute (grams)	Primary	1.5g
	Backup	2.0g
Energetics Mass - Main Chute (grams)	Primary	2.0g
	Backup	3.0g
Energetics Masses - Other (grams) - If Applicable	Primary	N/A
	Backup	N/A

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Payload

Payload 1 (official payload)	Overview
Payload 2 (non- scored payload)	Overview

Test Plans, Status, and Results

Ejection Charge Tests	<p>Full scale ejection charge sizes will be determined using a spreadsheet. The goal of the charge testing is to get a clean shear of the shear pins and a clean separation of the sections without fully extending the recovery harness. The ground tests will be conducted at the Battle Park launch site under the control of the RSO/LCO. Multiple charge tests will be conducted.</p>
Sub-scale Test Flights	
Full-scale Test Flights	<p>Full scale flight tests will be conducted at the Tripoli+A103 Battle Park launch during. Two flight tests are planned for. The first test will be a verification test of the deployment and experiment data logging using a J800. Expected altitude is 3200'. The second test will be flight verification using the K805 motor. This flight will be a full up flight with the experiment. These tests will be performed in February and March</p>

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Additional Comments

