Milestone Review Flysheet 2018-2019

Institution	Boy Scout Troop 17

Milestone	PDR

Vehicle Properties	
Total Length (in)	85.6
Diameter (in)	4
Gross Lift Off Weigh (lb)	17.8
Airframe Material(s)	G12 Fiberglass
Fin Material and Thickness (in)	G10 Fiberglass 0.125
Coupler Length(s)/Shoulder Length(s) (in)	8"/4"

Motor Properties	
Motor Brand/Designation	Aerotech K805
Max/Average Thrust (lb)	213/180
Total Impulse (lbf-s)	396
Mass Before/After Burn (lb)	3.4/1.9
Liftoff Thrust (lb)	179
Motor Retention Method	Aeropack

Stability Analysis	
Center of Pressure (in. from nose)	66.1
Center of Gravity (in. from nose)	51.9
Static Stability Margin (on pad)	3.53
Static Stability Margin (at rail exit)	2.4
Thrust-to-Weight Ratio	10.1
Rail Size/Type and Length (in)	1010 /120
Rail Exit Velocity (ft/s)	84.4

Ascent Analysis	
Maximum Velocity (ft/s)	648
Maximum Mach Number	0.58
Maximum Acceleration (ft/s^2)	364
Target Apogee (ft)	4900
Predicted Apogee (From Sim.) (ft)	4868

Recovery System Properties - Overall	
Total Descent Time (s)	85
Total Drift in 20 mph winds (ft)	1850

Recovery System Properties - Energetics		
Ejection System Energetics (ex. Black Powder)		
Energetics Mass - Drogue Chute (grams)	Primary	1.5
	Backup	2
Energetics Mass - Main Chute (grams)	Primary	2
	Backup	3
Energetics Mass - Other (grams) - If Applicable	Primary	
	Backup	

Recovery System Properties - Recovery Electronics	
Primary Altimeter Make/Model	Missile Works RRC3
Secondary Altimeter Make/Model	Missile Works RRC3
Other Altimeters (if applicable)	
Rocket Locator (Make/Model)	Missile Works RTX
Additional Locators (if applicable)	
Transmitting Frequencies (all - vehicle and payload)	***Required by CDR*** (Complete on pages 3 and 4)
Describe Redundancy Plan (batteries, switches, etc.)	Each altitmeter will have it's own screw switch, battery and deployment charge(s)
Pad Stay Time (Launch Configuration)	2 hours

Recovery System Properties - Drogue Parachute				
Manufacturer/Model			Sky Angle Classic	
Size or Diameter (in or ft)			20 in	
Main Altimeter Deployment Setting			Apogee	
Backup Altimeter Deployment Setting			Apogee plus 1 sec	
Velocity at Deployment (ft/s)			5	
Terminal Velocity (ft/s)			98.6	
Recovery Harness Material, Size, and Type (examples - 1/2 in. tubular Nylon or 1 in. flat Kevlar strap)			1/4" Tublar Kevlar	
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
	1213	1276		

Recovery System Properties - Main Parachute				
Manufacturer/Model			Sky Angle Classic	
Size or Diameter (in or ft)			60 in	
Main Altimeter Deployment Setting (ft)			750	
Backup Altimeter Deployment Setting (ft)			500	
Velocity at Deployment (ft/s)			98.6	
Terminal Velocity (ft/s)			18.7	
Recovery Harness Material, Size, and Type (examples - 1/2 in. tubular Nylon or 1 in. flat Kevlar strap)			1/4" tublar Kevlar	
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
	43.6	24.4	21.5	

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Payload	
Payload 1 (official payload)	Overview Thermoelectric generator mounted on motor tube, connectedto Arduino Uno and separate battery housed in an experiment avionics bay in between fin can and the rogue chute compartment.
Payload 2 (non-scored payload)	Overview

Test Plans, Status, and Results	
Ejection Charge Tests	A commerically avaiable charge size calculater will be used to estimate the initial size of the charges. This will be the starting point and will be adjusted until a clean section seperation is observed. The charge sizes will be documented in the check list and written on the back of each of the ebay lids fro future reference.
Sub-scale Test Flights	
Vehicle Demon-stration Flights	
Payload Demon-stration Flights	

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Transmitter #1			
Location of transmitter:	Nose cone		
Purpose of transmitter:	GPS tracker		
Brand	Missile Works	250mW	
Model	RTX	902-908 MHz	
Handshake or frequency hopping? (explain)	900 MHz ISM radio band (902-928 MHz). Radio Network Addressing is XBee Pro 900HP Preamble ID: 5. XBee Pro 900HP Network ID's: 0 thru FFFF which are assigned and maintained by the manufacture.		
Distance to closest e-match or altimeter (in)	40" from the Altitmeters and 80" from the motor/ematch		
Description of shielding plan:	None is required		

Transmitter #2			
Location of transmitter:			
Purpose of transmitter:			
Brand		RF Output Power (mW)	
Model		Specific Frequency used by team (MHz)	
Handshake or frequency hopping? (explain)			
Distance to closest e-match or altimeter (in)			
Description of shielding plan:			

Transmitter #3			
Location of transmitter:			
Purpose of transmitter:			
Brand		RF Output Power (mW)	
Model		Specific Frequency used by team (MHz)	
Handshake or frequency hopping? (explain)			
Distance to closest e-match or altimeter (in)			
Description of shielding plan:			

Transmitter #4			
Location of transmitter:			
Purpose of transmitter:			
Brand		RF Output Power (mW)	
Model		Specific Frequency used by team (MHz)	
Handshake or frequency hopping? (explain)			
Distance to closest e-match or altimeter (in)			
Description of shielding plan:			

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Transmitter #5

Location of transmitter:			
Purpose of transmitter:			
Brand		RF Output Power (mW)	
Model		Specific Frequency used by team (MHz)	
Handshake or frequency hopping? (explain)			
Distance to closest e-match or altimeter (in)			
Description of shielding plan:			

Transmitter #6

Location of transmitter:			
Purpose of transmitter:			
Brand		RF Output Power (mW)	
Model		Specific Frequency used by team (MHz)	
Handshake or frequency hopping? (explain)			
Distance to closest e-match or altimeter (in)			
Description of shielding plan:			

Additional Comments