Milestone Review Flysheet 2018-2019

Institution	U. of Hawaii - CC

Milestone	CDR

Vehicle Properties	
Total Length (in)	116.25 in
Diameter (in)	4 in
Gross Lift Off Weigh (lb)	32.2 lb
Airframe Material(s)	G-10 Fiberglass
Fin Material and Thickness (in)	Machined Aluminum
Coupler Length(s)/Shoulder Length(s) (in)	11 in/4.5 in

Motor Properties	
Motor Brand/Designation	Aerotech K1050W
Max/Average Thrust (lb)	487 lb/254 lb
Total Impulse (lbf-s)	545 lbf-s
Mass Before/After Burn (lb)	4.85 lb/2.1 lb
Liftoff Thrust (lb)	487 lb
Motor Retention Method	Aeropac (RB54) Universal

Stability Analysis	
Center of Pressure (in. from nose)	96.3 in
Center of Gravity (in. from nose)	64.4 in
Static Stability Margin (on pad)	6.98
Static Stability Margin (at rail exit)	5.11
Thrust-to-Weight Ratio	7.9
Rail Size/Type and Length (in)	10-10/120 in
Rail Exit Velocity (ft/s)	75.5 ft/s

Ascent Analysis	
Maximum Velocity (ft/s)	577.6 ft/s
Maximum Mach Number	0.513
Maximum Acceleration (ft/s^2)	382 ft/s^2
Target Apogee (ft)	4700
Predicted Apogee (From Sim.) (ft)	4820

Recovery System Properties - Overall	
Total Descent Time (s)	90 s
Total Drift in 20 mph winds (ft)	2637 ft

Recovery System Properties - Energetics		
Ejection System Energetics (ex. Black Powder)		Black Powder
Energetics Mass - Drogue Chute (grams)	Primary	3.0 g
	Backup	3.0 g
Energetics Mass - Main Chute (grams)	Primary	5.0 g
	Backup	6.0 g
Energetics Mass - Other (grams) - If Applicable	Primary	
	Backup	

Recovery System Properties - Recovery Electronics	
Primary Altimeter Make/Model	TeleMega V3.0
Secondary Altimeter Make/Model	PerfectFlight
Other Altimeters (if applicable)	
Rocket Locator (Make/Model)	TeleMega V3.0
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.)	Seperated power sources and switches. Completely independent systems
Pad Stay Time (Launch Configuration)	2 hr

Recovery System Properties - Drogue Parachute				
Manufacturer/Model			RocketMan	
Size or Diameter (in or ft)			4 ft	
Main Altimeter Deployment Setting			Apogee	
Backup Altimeter Deployment Setting			Apogee	
Velocity at Deployment (ft/s)			0 ft/s	
Terminal Velocity (ft/s)			75 ft/s	
Recovery Harness Material, Size, and Type (examples - 1/2 in. tubular Nylon or 1 in. flat Kevlar strap)			1 in Nylon (2 ton)	
Recovery Harness Length (ft)			40 ft	
Harness/Airframe Interfaces		Eyebolt 1/2 in thick, closed loop		
Kinetic Energy of Each Section (Ft-lbs)	Section 1	Section 2	Section 3	Section 4
	2812 Ft-lbs			

Recovery System Properties - Main Parachute				
Manufacturer/Model			RocketMan	
Size or Diameter (in or ft)			10 ft 8in	
Main Altimeter Deployment Setting (ft)			700 ft	
Backup Altimeter Deployment Setting (ft)				
Velocity at Deployment (ft/s)			75 ft/s	
Terminal Velocity (ft/s)			15 ft/s	
Recovery Harness Material, Size, and Type (examples - 1/2 in. tubular Nylon or 1 in. flat Kevlar strap)			1 in Nylon (2 ton)	
Recovery Harness Length (ft)			40 ft	
Harness/Airframe Interfaces		two point U-bolt (5/8 in thick)		
Kinetic Energy of Each Section (Ft-lbs)	Section 1	Section 2	Section 3	Section 4
	75 lb-ft	75-lb-ft		

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Payload	
	Overview
Payload 1 (official payload)	A four wheeled rover to be deployed from the payload section of the rocket using an internal drive thread/stepper motor assembly. The rover will then travel a distance >10 ft and collect a soil sample.
	Overview
Payload 2 (non-scored payload)	None scheduled at this time

Test Plans, Status, and Results	
Ejection Charge Tests	Deployment tests for both the Main and the Drogue chute, are scheduled for Feb 9, 2019
Sub-scale Test Flights	On-going; the last subscale test (testing the VDA) was done on 1/5 but follow-up testing is scyheduled for Feb 2, and Feb 16.
Vehicle Demon-stration Flights	A Full-Scale test flight is scheduled for Feb 17, 2019
Payload Demon-stration Flights	Sub-system test flights are on-going with a Full-Scale Flight test scheduled for Feb 17, 2019

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Transmitter #1			
Location of transmitter:	Avionics section of the Rocket		
Purpose of transmitter:	location of descending rocket		
Brand	Altus Metrum	RF Output Power (mW)	40 mW
Model	TeleMega V3.0	Specific Frequency used by team (MHz)	434.55MHz
Handshake or frequency hopping? (explain)			
Distance to closest e-match or altimeter (in)	4 in seperated by 1/2" plywood bulkhead		
Description of shielding plan:	1/2" thick Ply bulkheads. The fore Bulkhead, closest to the main Pyro charge will be re-enforce		

Transmitter #2			
Location of transmitter:	Payload section (nosecone)		
Purpose of transmitter:	Location of descending payload		
Brand	Digi	RF Output Power (mW)	50 mW
Model	XBPro 900HB	Specific Frequency used by team (MHz)	902 MHz
Handshake or frequency hopping? (explain)			
Distance to closest e-match or altimeter (in)	48 in		
Description of shielding plan:			

Transmitter #3			
Location of transmitter:	Payload section		
Purpose of transmitter:	Payload Deployment		
Brand	Xbee	RF Output Power (mW)	120 mW
Model	Pro Zigbee	Specific Frequency used by team (MHz)	2.4-2.5 GHz
Handshake or frequency hopping? (explain)			
Distance to closest e-match or altimeter (in)	48 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
A drop test to test shear pin integration is planned for 1/24/19.