

Milestone Review Flysheet

Institution University of Alabama, Huntsville

Milestone FRR

Vehicle Properties

| | |
|---------------------------|-----------------|
| Total Length (in) | 119 inches |
| Diameter (in) | 6 inches |
| Gross Lift Off Weigh (lb) | 52.7 |
| Airframe Material | Fiberglass |
| Fin Material | G-10 Fiberglass |
| Coupler Length | 14 inches |

Stability Analysis

| | |
|---|------------------|
| Center of Pressure (in from nose) | 89.82 inches |
| Center of Gravity (in from nose) | 76.5 inches |
| Static Stability Margin | 2.97 (Burnout) |
| Static Stability Margin (off launch rail) | 2.18 |
| Thrust-to-Weight Ratio | 9.38 |
| Rail Size and Length (in) | 1515 / 96 inches |
| Rail Exit Velocity (ft/s) | 73.79 |

Recovery System Properties

Drogue Parachute

| | | |
|---|---|----------------|
| Manufacturer/Model | Fruity Chute/CFC-18 | |
| Size (ft ²) | 1.77 | |
| Altitude at Deployment (ft) | 5287 | |
| Velocity at Deployment (ft/s) | 0 | |
| Terminal Velocity (ft/s) | 87.1 | |
| Recovery Harness Material | Nylon | |
| Harness Size/Thickness (in) | 1 | |
| Recovery Harness Length (ft) | 50 | |
| Harness/Airframe Interfaces | Connected between lower bulkhead and aft end of avionics bay coupler. | |
| Kinetic Energy of Each Section (Ft-lbs) | Upper Airframe | Lower Airframe |
| | 2133 | 2975 |

Recovery Electronics

| | |
|--------------------------------------|--|
| Altimeter(s)/Timer(s) (Make/Model) | Perfectflite Stratologger SL100 |
| Redundancy Plan | Dual, 100% independently operating systems |
| Pad Stay Time (Launch Configuration) | 6 hours |

Motor Properties

| | |
|-------------------------|---------------------|
| Motor Designation | Aerotech L2200 |
| Max/Average Thrust (lb) | 697.07 / 481.82 |
| Total Impulse (lbf-s) | 1147.43 |
| Mass Before/After Burn | 10.5 / 4.93 |
| Liftoff Thrust (lb) | 537.61 |
| Motor Retention | Tail Cone Snap Ring |

Ascent Analysis

| | | |
|---|--------|------|
| Maximum Velocity (ft/s) | 636.73 | |
| Maximum Mach Number | 0.57 | |
| Maximum Acceleration (ft/s ²) | 408.52 | |
| Target Apogee (From Simulations) | 5281 | feet |
| Stable Velocity (ft/s) | N/A | |
| Distance to Stable Velocity (ft) | N/A | |

Recovery System Properties

Main Parachute

| | | | |
|---|---|----------------|----------------|
| Manufacturer/Model | Fruity Chute/144" Iris Ultra Compact | | |
| Size (ft ²) | 144 | | |
| Altitude at Deployment (ft) | 600 | | |
| Velocity at Deployment (ft/s) | 87.1 | | |
| Terminal Velocity (ft/s) | 12.8 | | |
| Recovery Harness Material | Nylon | | |
| Harness Size/Thickness (in) | 1 | | |
| Recovery Harness Length (ft) | 50 | | |
| Harness/Airframe Interfaces | Connected between forward end of avionics bay coupler and nose cone bulkhead. | | |
| Kinetic Energy of Each Section (Ft-lbs) | Nose Cone | Upper Airframe | Lower Airframe |
| | 14.76 | 31.32 | 64.24 |

Recovery Electronics

| | |
|--|---|
| Rocket Locators (Make/Model) | XBee Radio/Atenova GPS Chip Combination |
| Transmitting Frequencies | 902-928 Mhz |
| Black Powder Mass Drogue Chute (grams) | 5.0 grams |
| Black Powder Mass Drogue Chute (grams) | 3.10 grams |

Milestone Review Flysheet

Institution University of Alabama, Huntsville

Milestone FRR

Autonomous Ground Support Equipment (MAV Teams Only)

| | |
|--------------------------------|---|
| Capture Mechanism | Overview |
| | |
| Container Mechanism | Overview |
| | |
| Launch Rail Mechanism | Overview |
| | ***Include Description of rail locking mechanism*** |
| Igniter Installation Mechanism | Overview |
| | |

Payload

| | |
|-----------|--|
| Payload 1 | Overview |
| | Roll controlling payload using three control surfaces actuated by three independent servos with a single power source. Using a National Instruments myRIO for a controller fins will be able to induce rotation and produce a counter roll to stop rotation. Inputs will come from a Sparkfun 9 DOF IMU. |
| Payload 2 | Overview |
| | |

Test Plans, Status, and Results

| | |
|-------------------------|--|
| Ejection Charge Tests | Will be conducted prior to full-scale test flights |
| Sub-scale Test Flights | Two subsacle vehicles built and flown, results in CDR document |
| Full-scale Test Flights | Two Full-scale flights have been performed. An additional flights will be conducted prior to competition flight. |

Milestone Review Flysheet

Institution

University of Alabama, Huntsville

Milestone

FRR

Additional Comments