

Flight Endurance



Member ID: 22165031

Highland Springs, Virginia

2026

Table of Contents

Title Page	1
Table of Contents	2
Flight Log	3
Technical Attributes	4
Modifications Analysis	5
Technical Review of Flight Log	6
Plane Assembly Drawing	7
Engineering Drawings	8-9

Flight Log

Participant ID: 22165031			Dates: January 21, 2026 to February 7, 2026			
Flight #	# of winds	Time aloft	Flight Pattern	Notes	Trim adjustment	Advisor sign off
#1	400	2 sec	Dived Downwards	Hand launched	Moved saddle back	
#2	400	3 sec	Slowly gilded downwards in a circular motion	Hand launched	Tilted tail clockwise	
#3	500	5 sec	Gilded downwards with immediate left turn	Hand launched	Move saddle forward and tilted tail counter-clockwise	
#4	500	4 sec	Downwards and leftwards glide	Hand launched	Slightly raised front wing post and lowered back wing post	
#5	500	5 sec	Leftwards glide downwards	Hand launched	Lowered front wing post	
#6	600	5 sec	Still moved leftwards but with less downwards glide	Hand launched	Tail was tilted clockwise	
#7	800	6 sec	Less leftwards turn and more straight gliding period with slow circular ending motion	Hand Launched above shoulder level	Moved saddle forward and increased winds	
#8	600	0 sec	Did not lift from ground	Launch from ground	Added more winds	
#9	800	0.5 sec	Lifted very slightly off the ground	Launch from ground	Increased winds and cutted off little piece of tail for weight reduction and lift	
#10	1000	3 sec	Slightly off the ground in a circular path	Launch from ground	Titled wing posts and moved saddle backwards	

Technical Attributes



1. **Wing:** The wing consists of a balsa wood frame covered with a stretched produce bag, firmly connected to the wing posts.
2. **Wing and Tail Tips:** Thin balsa sheets are used for the wing and tail tips to improve stability and balance.
3. **Tail:** The tail is composed of a balsa wood frame with film over it to help with directional maneuvering.
4. **Motor Stick:** The motor stick is made of solid balsa wood and includes a hook for attaching the rubber band motor.
5. **Tail Post:** It is made of basswood and helps behind with the flexibility of the entire wing.
6. **Propeller:** It is made out of plastic in a wing-shaped format, leading the motor stick and revolving during flight.
7. **Saddle:** It is made of balsa wood with straws that allow for flexibility of position and angle of wing.
8. **Landing Gear:** The landing gear comprises circular balsa wood wheels with thin metal supporters that are connected to the rest of the plane.

Modifications Analysis

Weight and Height Reduction: While building my plane, I realized that I was not meeting the requirements for plane length and plane weight as my plane was exceeding both of the requirements. In order to combat both of these at once, I cut off about four centimeters from the tail boom. I was easily able to restore balance to this by altering the saddle to return to normal and more improved balance.

Wingtip reduction: When I tested my plane, I noticed that the wind tips were causing extra drag and instability during flight, especially when slanted to a certain side. To address this issue, I decided to cut the outer edges of the wings down three centimeters on each side. This reduced their overall drag but also required moving the wing to a more appropriate angle.

Technical Review of Flight Log

Flight #1 (Number of Winds: 400; Hand launched)

- Dived Downwards
- Flight Time: 2 seconds
- Adjustments: Moved saddle backwards

Flight #2 (Number of Winds: 400; Hand launched)

- Slowly gilded downwards in a circular motion
- Flight Time: 3 seconds
- Adjustments: Tilted Tail Clockwise

Flight #3: (Number of Winds: 500; Hand launched)

- Gilded downwards with immediate left turn
- Flight Time: 5 seconds
- Adjustments: Move saddle forward and tilted tail counter-clockwise

Flight #4: (Number of Winds: 500; Hand launched)

- Downwards and leftwards glide
- Flight Time: 4 seconds
- Adjustments: Slightly raised front wing post and lowered back wing post

Flight #5: (Number of Winds: 500; Hand launched)

- Leftwards glide downwards
- Flight Time: 5 seconds
- Adjustments: Lowered front wing post

Flight #6: (Number of Winds: 600; Hand launched)

- Still moved leftwards but with less downwards glide
- Flight Time: 5 seconds
- Adjustments: Tail was titled clockwise

Flight #7: (Number of Winds: 800; Hand launched above shoulder level)

- Less leftwards turn and more straight gliding period with slow circular ending motion
- Flight Time: 6 seconds
- Adjustments: Moved saddle forward and increased winds

Flight #8: (Number of Winds: 600; Launch from ground)

- Did not lift from ground
- Flight Time: 0 seconds
- Adjustments: Added more winds

Flight #9: (Number of Winds: 800; Launched from ground)

- Flight Patterns: Lifted very slightly off the ground
- Flight Time: 0.5 seconds
- Adjustments: Increased winds and cutted off little piece of tail for weight reduction and lift

Flight #10: (Number of Winds: 1000; Launched from ground)

- Flight Patterns: Slightly off the ground in a circular path
- Flight Time: 3 seconds
- Adjustments: Titled wing posts and moved saddle backwards

