

"Ambitiously Designed, Mission Focused"

Competition Goal:

Design an aircraft to fly as many sensors (i.e. pennies) as possible for 3 minutes. The mission score equals the number of pennies carried.

Mission Constraints:

The vehicle must be capable of safely flying within the indoor bounds of a basketball court.

The battery is limited to 200 mAh.

Can only use two servo motors and one esc.



Contact Info



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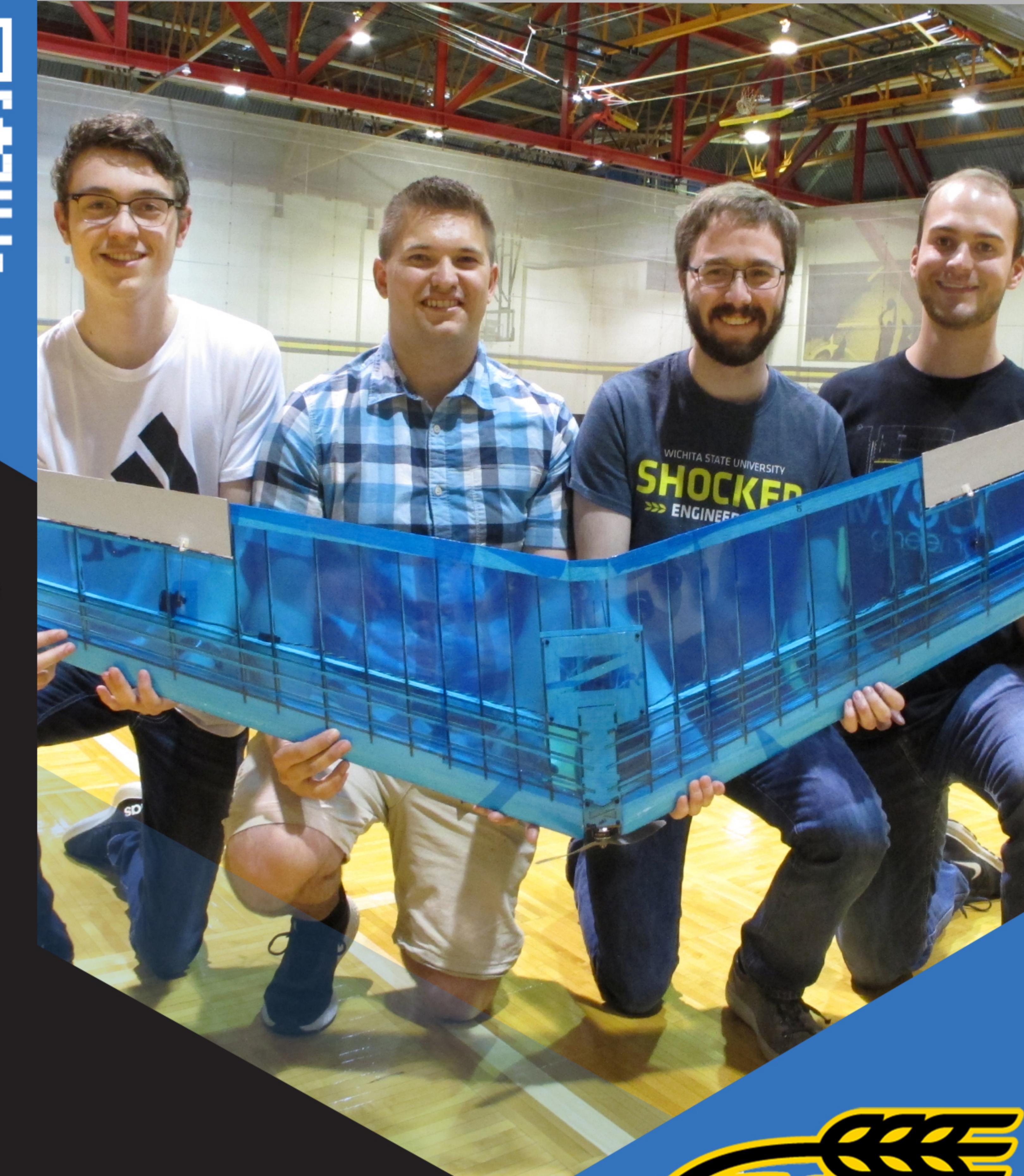


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Thanks to Our Event Sponsor:



**Team 8:
Penny
Pinchers**

INNOVATIVE DESIGN

Ditch the Tail

The rules limit our design to a maximum of two servo motors. A tailless configuration was selected in order to obtain two axis control without sacrificing roll rate through the use of two elevons.

Winglet Stabilization

The winglets on the wing tips will ensure adequate directional stability and reduce induced drag.

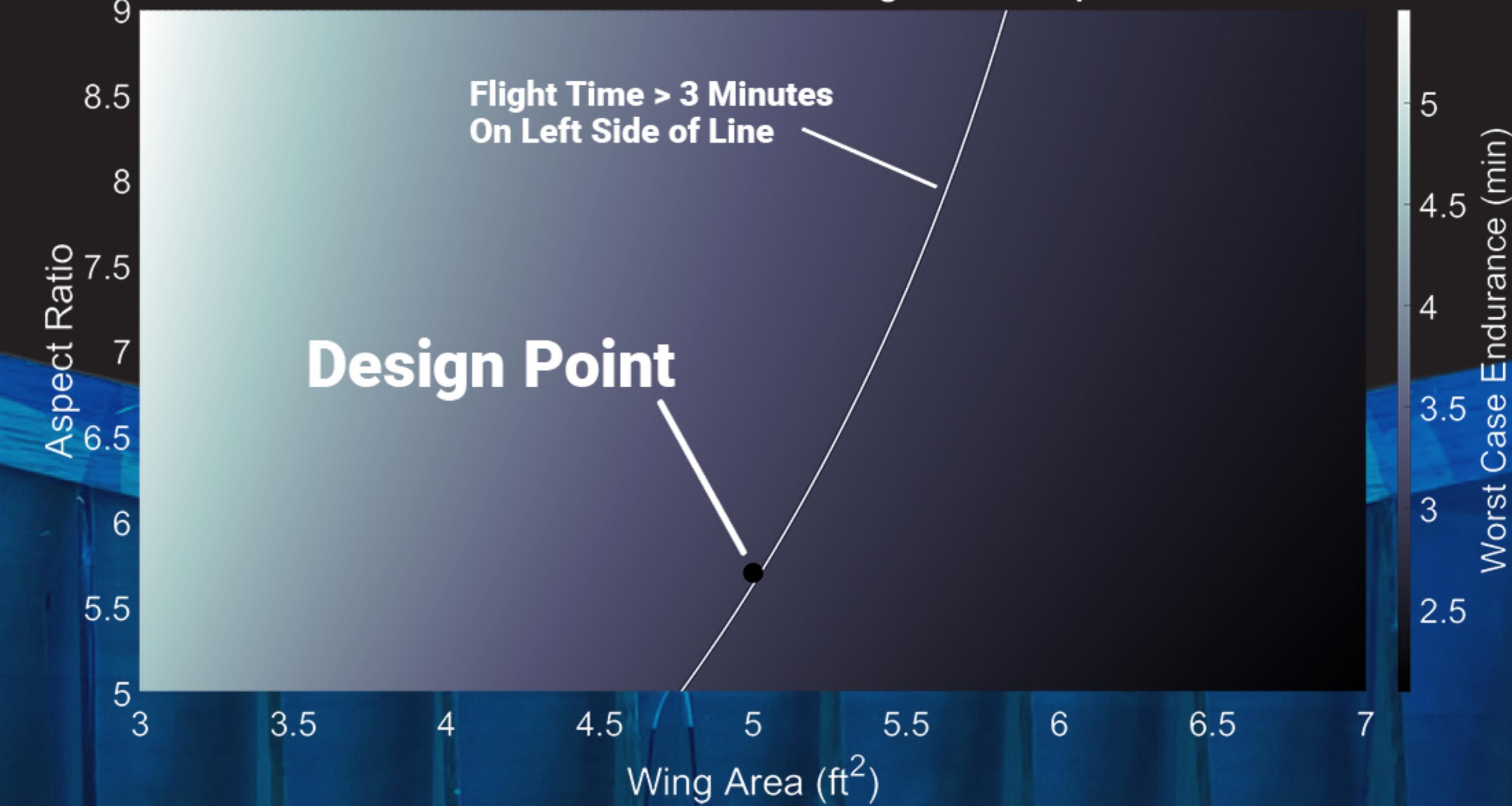
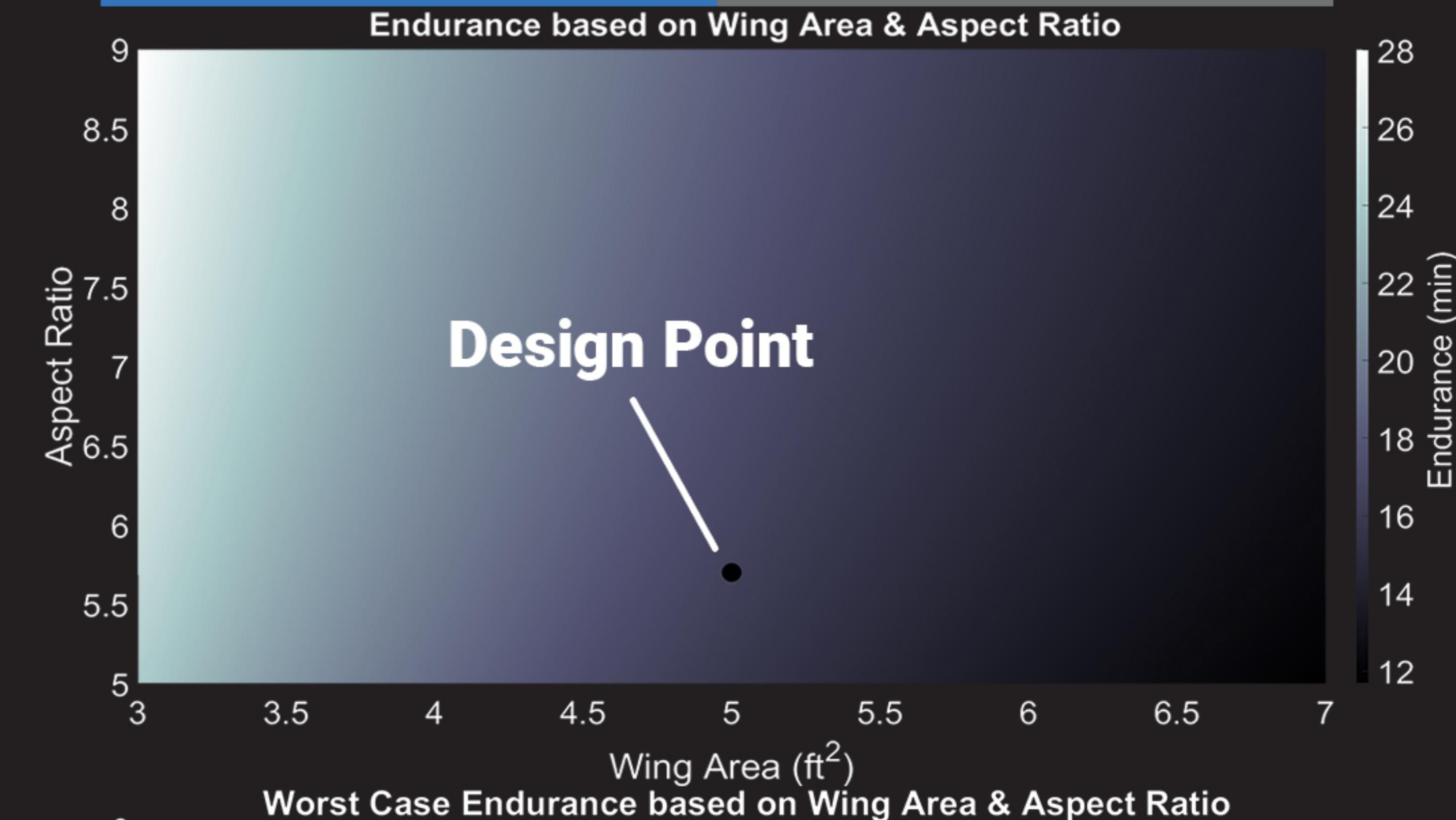
Payload Bay

The root section of the vehicle has two payload panels which can be removed for payload and electronics access. The payload bays also allow for the center of gravity to be fine tuned.

SPECIFICATIONS

- ▶ Max Weight: 1.25 lbf
- ▶ Empty Weight: 0.78 lbf
- ▶ Cruise Velocity: 25 ft/s
- ▶ Stall Speed: 16 ft/s
- ▶ Aspect Ratio: 5.6
- ▶ Wing Area: 5 ft²
- ▶ Wing Span: 5.3 ft
- ▶ Wing Loading: 0.24 lbf/ft²
- ▶ Design Load Factor: 5
- ▶ Max Penny Count: 85

DESIGN OVERVIEW



Maximize Payload

The mission requirement to fly for at least 3 minutes was a critical design parameter. A 'Worst Case' Endurance was found and used to size the aircraft. The span was eventually limited to a max of 5.3 ft, and aspect ratio was decreased until worst case endurance was slightly higher than 3 minutes.

Construction Method

The balsa wood construction creates a strong, yet lightweight, vehicle while the skeleton style structure yields simple and predictable load paths.

