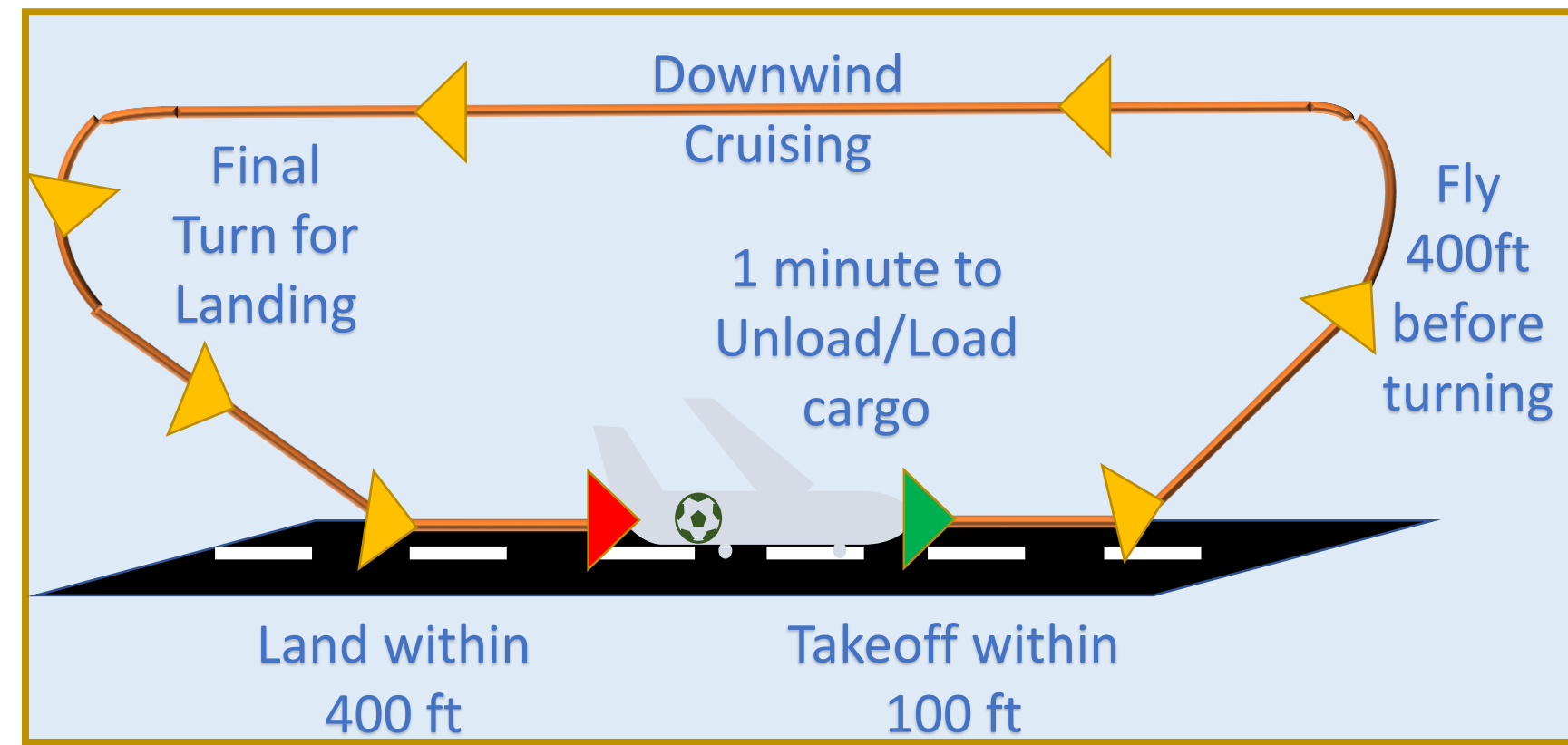


T507 SAE Aero Design Competition East – Aero Propulsions

M. Louis-Charles, A. Moya, S. Pinto, C. Riley, N. Wright

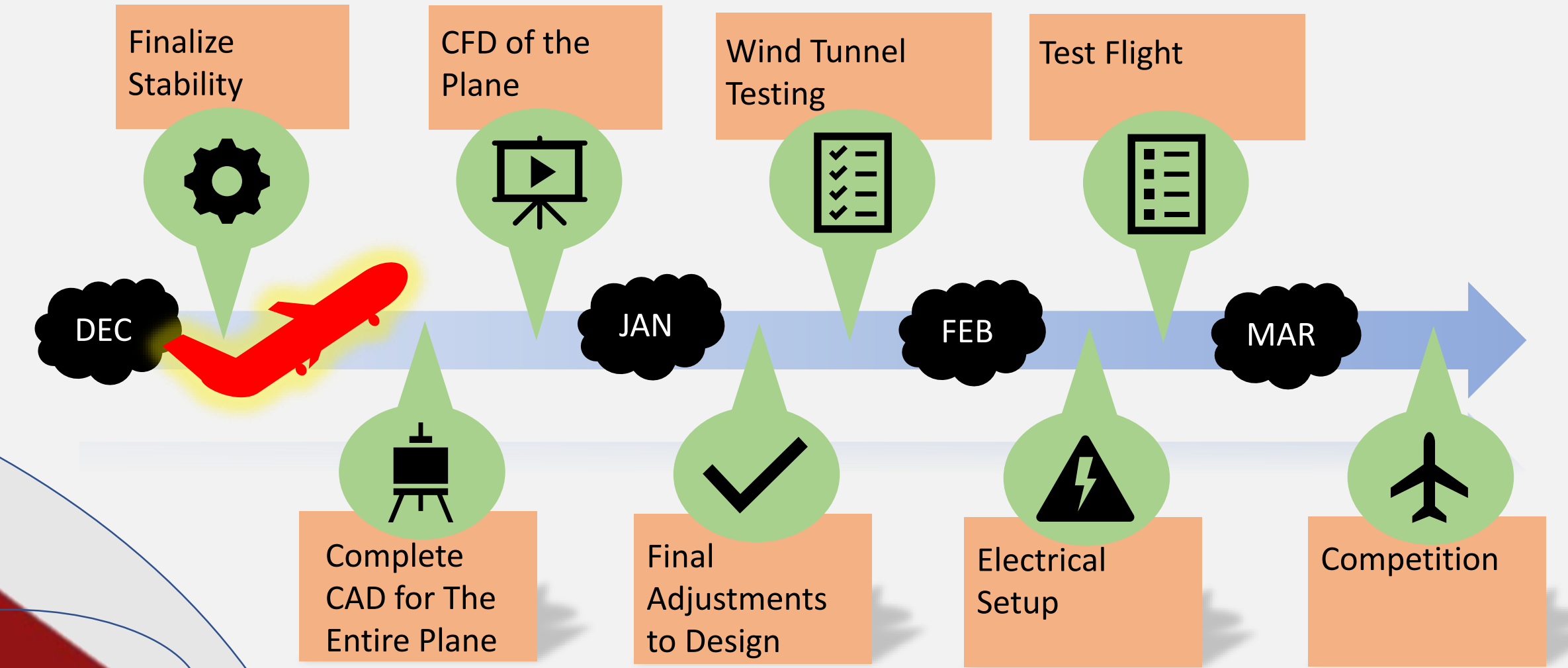
Requirements



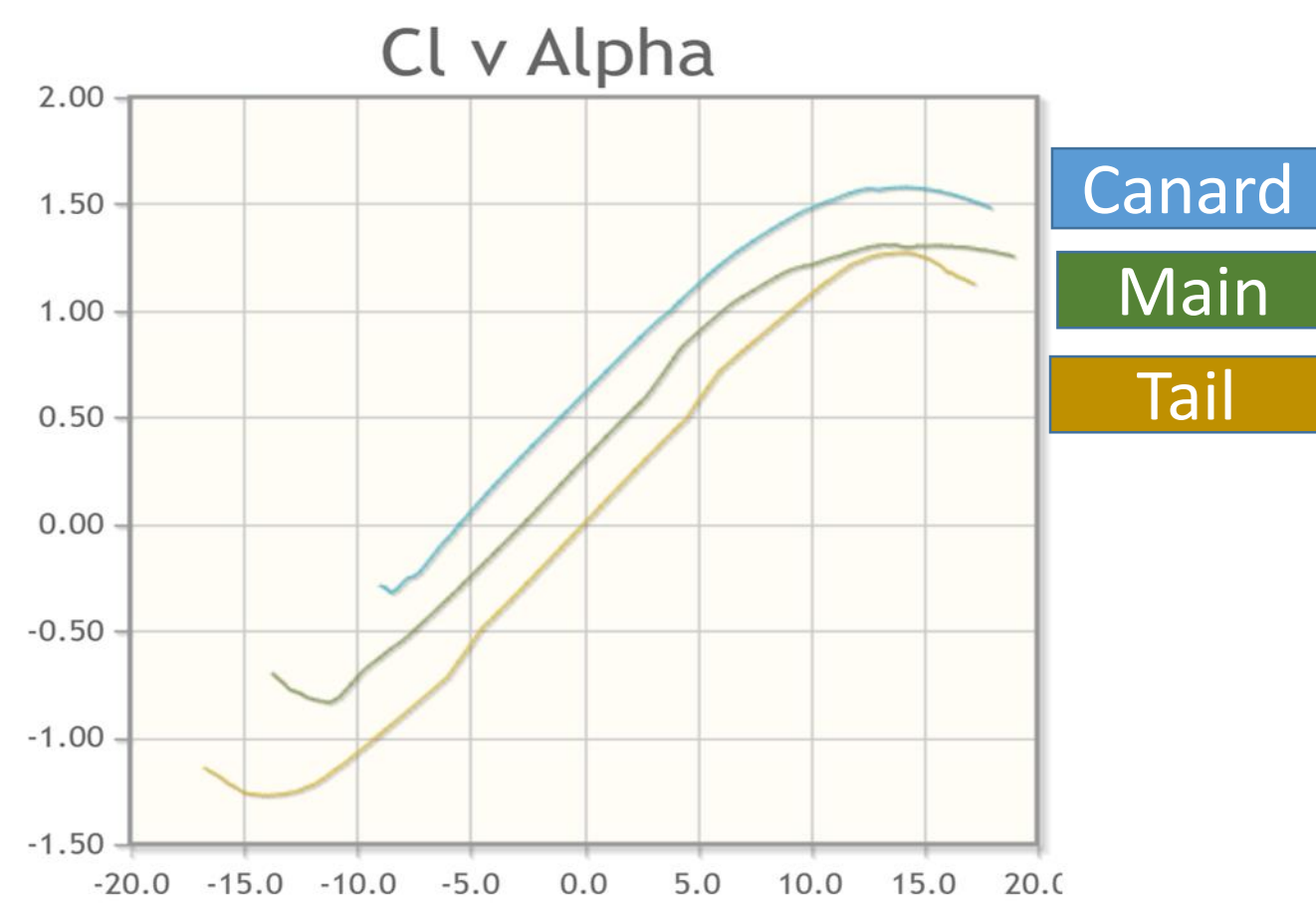
Objective

✦ The objective of the aero-propulsion team is to ensure that the plane takes off and lands while carrying a payload and completing the flight path.

Future Work



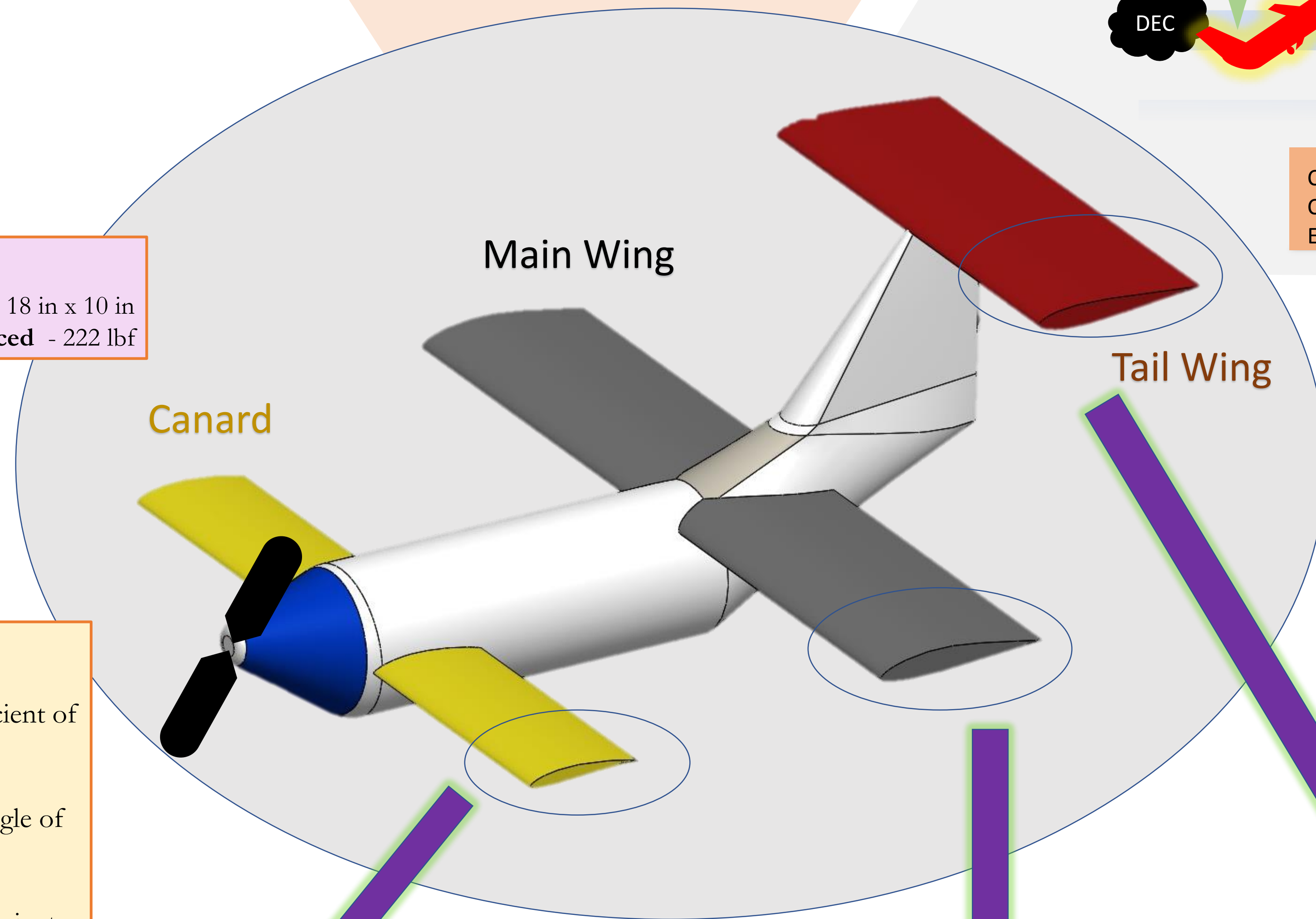
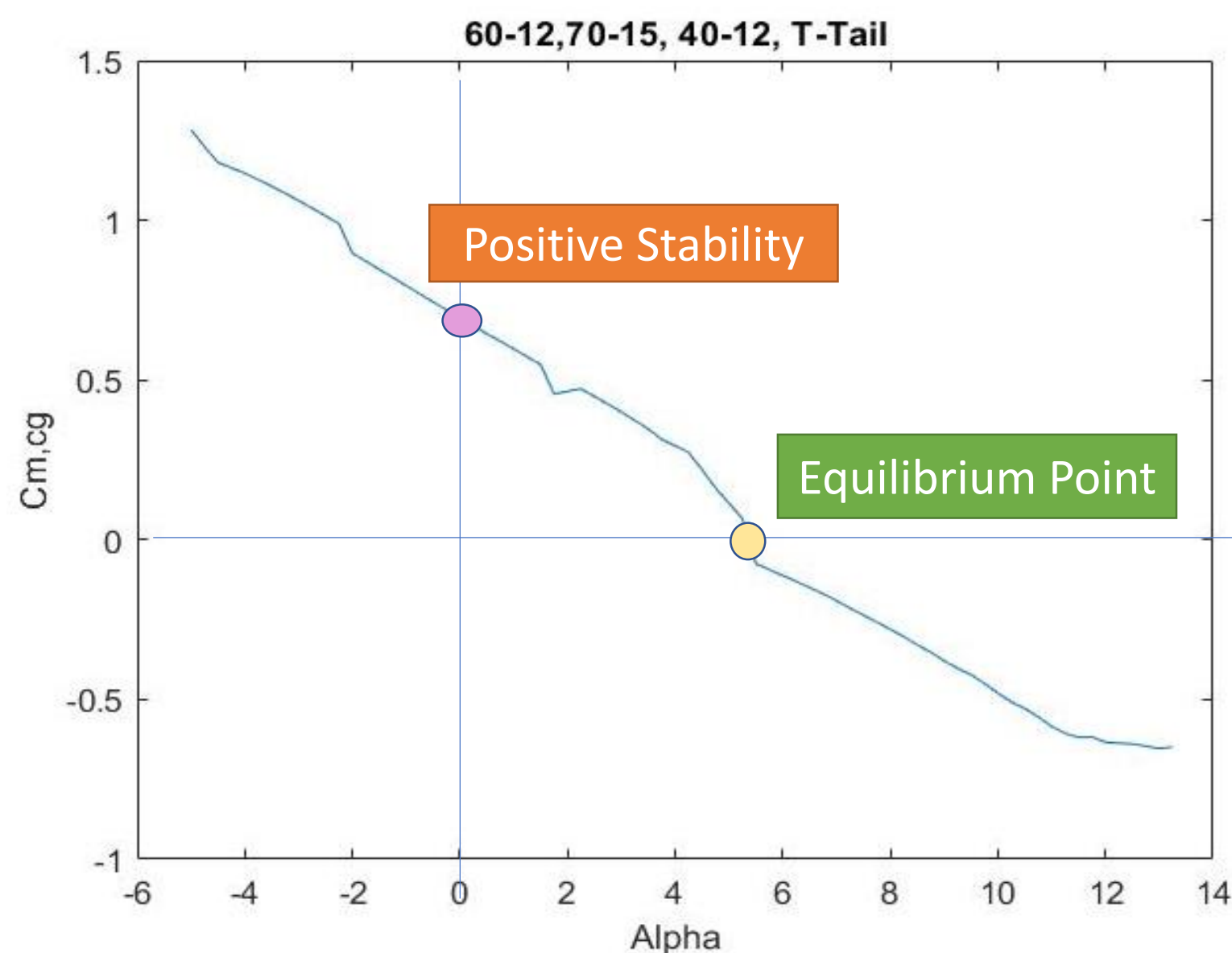
Airfoil Selection



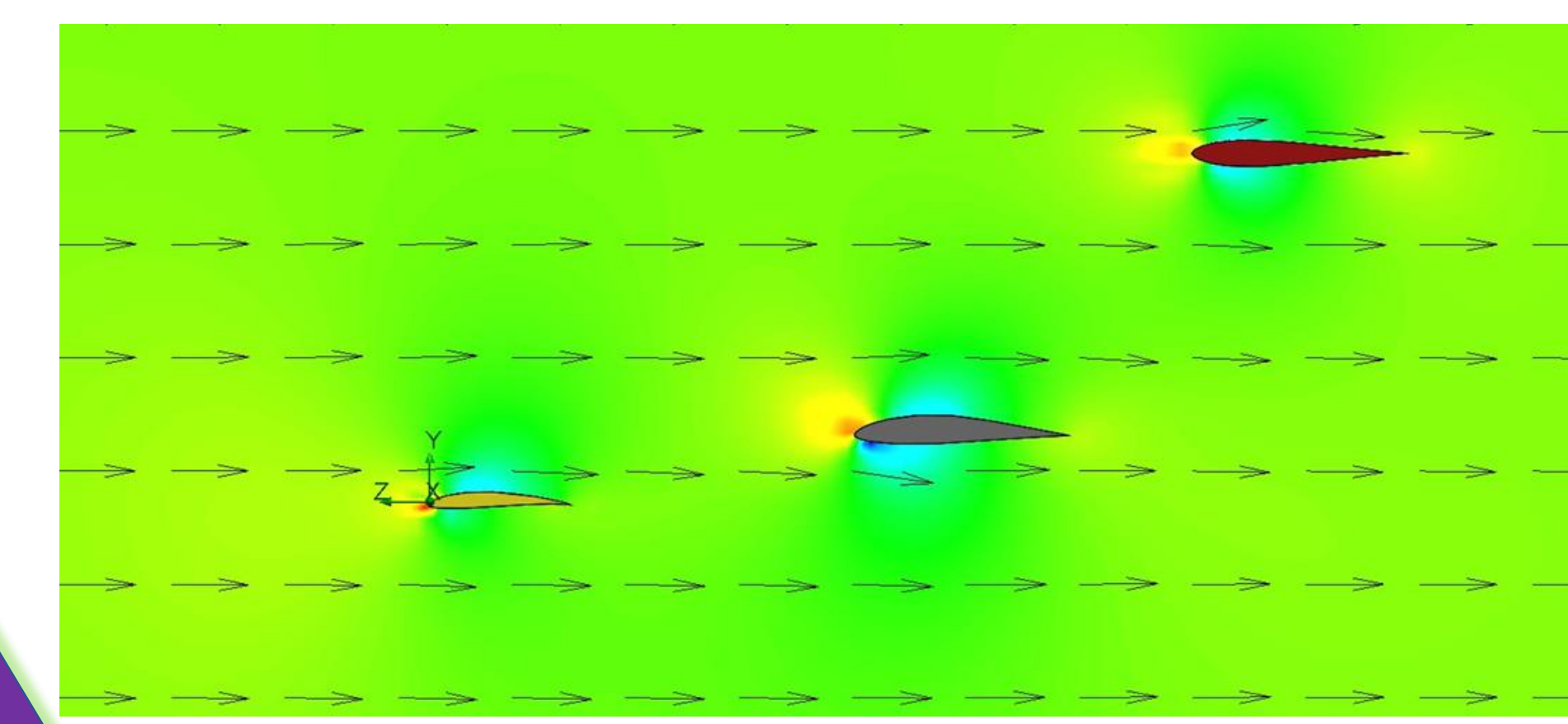
Propeller
Dimensions – 18 in x 10 in
Thrust produced - 222 lbf

KEY:
Cl : Coefficient of Lift
Alpha : Angle of Attack
Cm: Coefficient of Moment about Center of Gravity

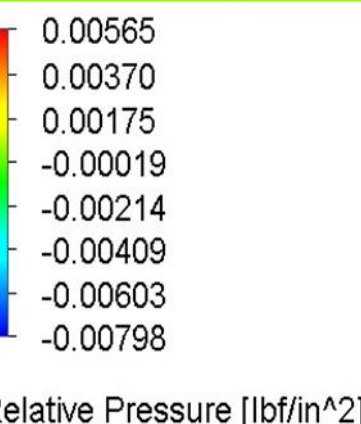
Stability



CFD



✦ Negligible vortices from wings
✦ Main wing has biggest pressure variation



Canard Airfoil (Eppler 214)

Chord Length 12 in.

- ✦ Wingspan: 60 in
- ✦ Stall at Alpha = 7 deg

Main Wing Airfoil (Eppler 197)

Chord Length 15 in.

- ✦ Wingspan: 70 in.
- ✦ Stall at Alpha = 8 deg

Tail Stabilizer (Eppler 168)

Chord Length 15 in.

- ✦ Wingspan: 40 in.
- ✦ Stall at Alpha = 11 deg