**Wing Wind Tunnel Tests 7th March 2023**

**Starboard**

* Set up wing in wind tunnel, set up data logging software (forces and moments measured with load cells, and pressure tapping readings)
  + Data logger measures response across a sample of 10 seconds and takes an average
  + The wing’s chord line is out of line with the holes drilled into the main spar, so the wing rig was at an offset – this limited our nose down AOA to –5
* No wind, changed angle of attack in 5 degree increments, from –5 to 25
* Turned wind tunnel on, increasing wind speed in increments of 5 m/s, up to 20 m/s (no higher due to buffeting behaviour of wing)
* First sweep – flap angle zero (cruise control/loiter), AOA increasing in 5 degree increments from –5 to 20 (software crashed randomly so we stopped and started again), observing carefully before increasing further to 30.
  + AOA at 20 degrees – buffeting observed
  + AOA 25 – flow still somewhat attached at wing tip, turbulent everywhere else (observed using the red yarn pieces taped along the wing)
  + AOA 30 – maximum AOA possible due to buffeting
* Back to zero for second sweep – we changed the AOA, then set the three flap angles (take-off, landing, and stall), and logged data for each one. I.e. for zero AOA, we set the flap at 3 degrees(take-off), took a reading, then set it to 13 degrees (landing) and took a reading, and then 22 degrees (stall) and took a reading. Then set the AOA to 5 and repeated the process, etc.
* At AOA of 5 and flap angle of 22, pressure tapping hole number 2 died (its readings were off the scale).
* No aileron test as the servo was broken.

**Port**

* Mostly the same as starboard
* No wind AOA range from –10 to 30 (offset was different for this wing)
* At AOA zero and flap angle 20 (the highest flap actuation possible for this wing), the flap got stuck, so we restarted the wind tunnel
* At AOA 20 and flap angle 20, the flap stopped actuating, and we believe it was something to do with the mechanism failing – we tried to zip tie things back into place in the wind tunnel but decided to end the test there.
* As with starboard, the aileron wasn’t working, so we couldn’t test it.