515 Report considerations (problem 2)

Airfoil created

* Naca 2412 airfoil (geometry created at airfoiltools.com and imported to star ccm)
* Sharp trailing edge on naca airfoil
* Naca airfoil curve imported using polyline and then extruded 1 meter
* Trailing edge and leading edge named

Fluid domain created

* Incompressible flow
* Bullet shaped domain, at least 10 body lengths away from the body
* Domain then extruded 1 meter as well

Bodies subtracted

* Boolean subtraction
* Back face is named outlet
* Other faces are inlet

New part created

Badge for 2D meshing

Boundary for each part surface

Mesh created

* Polygonal
* Base size set to 1 initially
* Curvature set to 72 (1 point every 5 degrees)
* Surface growth rate set to 1.15
* Custom surface control at edge of domain (inlet and outlet) set relative size to 100 base size
* Custom surface control and le and te, relative size made 0.1 percentage of base with min size being 0.05 percent base size

Base size changed under operations under default controls under base size

Physics models

* Steady, incompressible 2D, not turbulent
* Gas, segregated flow (recommendation), constant density
* Initial conditions velocity changed to 0.996x10m/s = x and 0.087x10m/s = y

Change regions

* Inlet (velocity inlet) 10 m/s at 5 degrees so 0.996=x (cos) and 0.087=y(sin)
* Outlet (pressure outlet) 0 pa atm

Set steps

* Run enough to stabilize

Create reports

* Lift put force direction as 0.996 = x and 0.087 = y
* Drag put force direction as -0.87= x and 0.996 = y
* Add velocity magnitude to color bar
* Smooth field instead of rugged
* Change to tropical colors