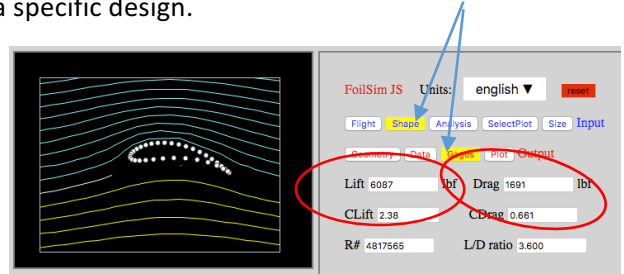




# FoilSim Investigation

Aerospace engineers use a wide variety of computer simulations to try out their ideas *before* they take the time to actually build them. Building physical models is fun, but it can be time-consuming and costly; computer simulations give us a chance to see what might work before we commit ourselves to a specific design.

Here, we'll use a simulation program called "FoilSim III" which was designed by NASA to help share what air foils of different types do. In particular, you'll get to choose the shape, camber, and angle of attack – then the simulation calculates the lift, drag, and various coefficients that apply to that specific type of air foil.



For this assignment, use one of our computers and Google Chrome to go the website <http://www.bit.ly/FoilSim>. Then, use the web-based program provided to fill in the chart below. Once you've filled in the chart, answer the few questions that follow.

*You are welcome to complete this assignment in your engineering notebook OR on a printed copy of this paper*

Air Foil Parameters (inputs)			Forces (outputs)	
Air foil shape	Angle-deg	Camber-%c	lft (lbf)	Drag (lbf)
Airfoil	0	0		
Airfoil	9	15		
Airfoil	-7	-5		
*Airfoil (choose your own)				
Ellipse	0	0		
Ellipse	-9	11		
*Ellipse (choose your own)				
Plate	0	0		
Plate	5	5		
*Plate (choose your own)				

1. Which of the air foils has the highest LIFT? Which has the highest DRAG?
2. What is different about the shapes "Airfoil" and "Ellipse"? How are they the same?
3. What happens to lift & drag as the angle of attack (Angle-deg) increases?
4. What happens to lift & drag as the camber (Camber-%c) increases?

**NEXT STEPS:** Enter your data for the three "Choose Your Own" data points in your table (The ones with the \*) into the class spreadsheet. This spreadsheet can be accessed through our website.