

# Marske Pioneer 3



Glider aircraft add-on for X-Plane 9.7 and above

# 3D cockpit

(\* this add-on has 3d cockpit only, which is fully object modeled)

Front face of compass have data-ref trick that 'click and drag left-right' to shift CG.  
Drag to right shift CG forward and left to afterward.  
Also, click the right-up side screw of Altimeter to set default CG position.

Screws around ASI have data-ref trick that 'click to set' payload weight.  
60kg / 132.3lb (left-up), 70kg / 154.3lb (right-up ), 80kg / 176.4 lb (left-down) and 90kg / 198.4lb (right-down)

Barometer adjustment  
(click and drag left - right)

Total energy audio switch  
(click to toggle)

Please use  
'Ctrl + R / E' to  
open / close  
canopy

Screws around air vent  
have data-ref trick too that  
'click to set' ballast.  
200lb / 90.72 (left-up),  
100lb / 45.36kg (right-up ),  
setting zero (left-down) and  
jettison button (right down)





## Misc comments...

### Fuselage Cd

has been calculated with free CFD software OpenFOAM  
<http://www.openfoam.com/>  
The result was '0.047' but I think my modeling is not so accurate, also real one may have better laminar flow body, so I set Cd = "0.045" for this time.

*Wind tunnel Dimension*  
5m high x 10m width x 10m long

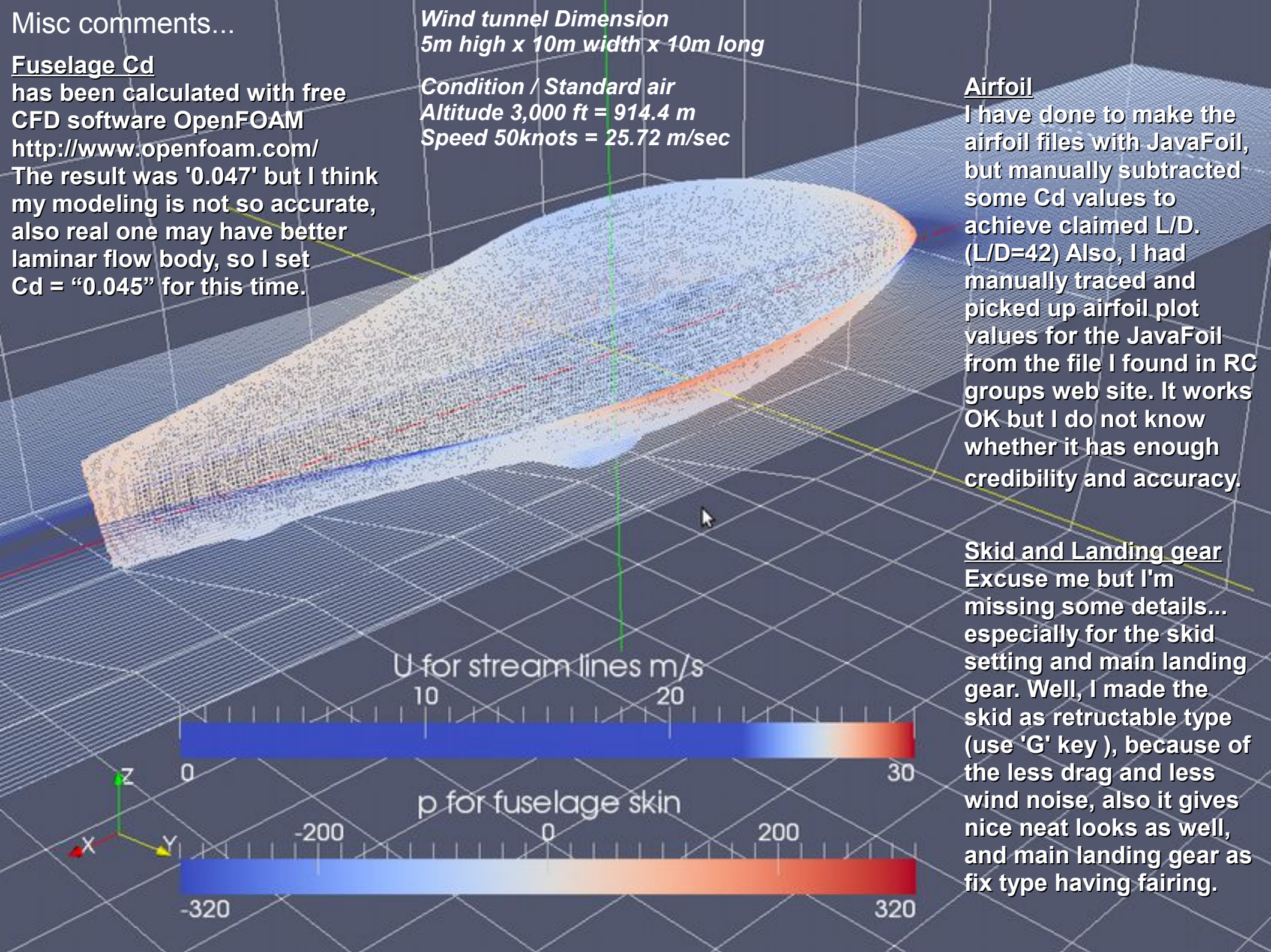
*Condition / Standard air*  
Altitude 3,000 ft = 914.4 m  
Speed 50knots = 25.72 m/sec

### Airfoil

I have done to make the airfoil files with JavaFoil, but manually subtracted some Cd values to achieve claimed L/D. (L/D=42) Also, I had manually traced and picked up airfoil plot values for the JavaFoil from the file I found in RC groups web site. It works OK but I do not know whether it has enough credibility and accuracy.

### Skid and Landing gear

Excuse me but I'm missing some details... especially for the skid setting and main landing gear. Well, I made the skid as retractable type (use 'G' key), because of the less drag and less wind noise, also it gives nice neat looks as well, and main landing gear as fix type having fairing.





## Some more comments...

### About aileron setting

Ordinary, aircrafts with high aspect ratio wing use a technique called 'Differential ailerons' to reduce 'adverse yaw'. I don't know whether Pioneer 3 uses this technique ( Pioneer 2 do, so it should be ) but this time I made the aileron setting to symmetrical. ( $\pm 15^\circ$ )

Because I found asymmetric raised side aileron generate pitch up moment, this is normal for all aircrafts, but it resulted in more severe pitch up tendency for this bird. (due to less of counter moment on the other side aileron, short arm from CG to Aerodynamic center of airfoil, fundamental plank- kind airfoil characteristics and 'no tail' design as well)

To reduce this unwanted moment, maybe 'aileron with elevator' configuration could be used, but I could not find any proper information. So, I just advise you, "KICK the RUDDERS HARD" when roll into a turn. Or, DIY at Expert > Special Controls > "ailerons 1 with pitch" in Plane-Maker.

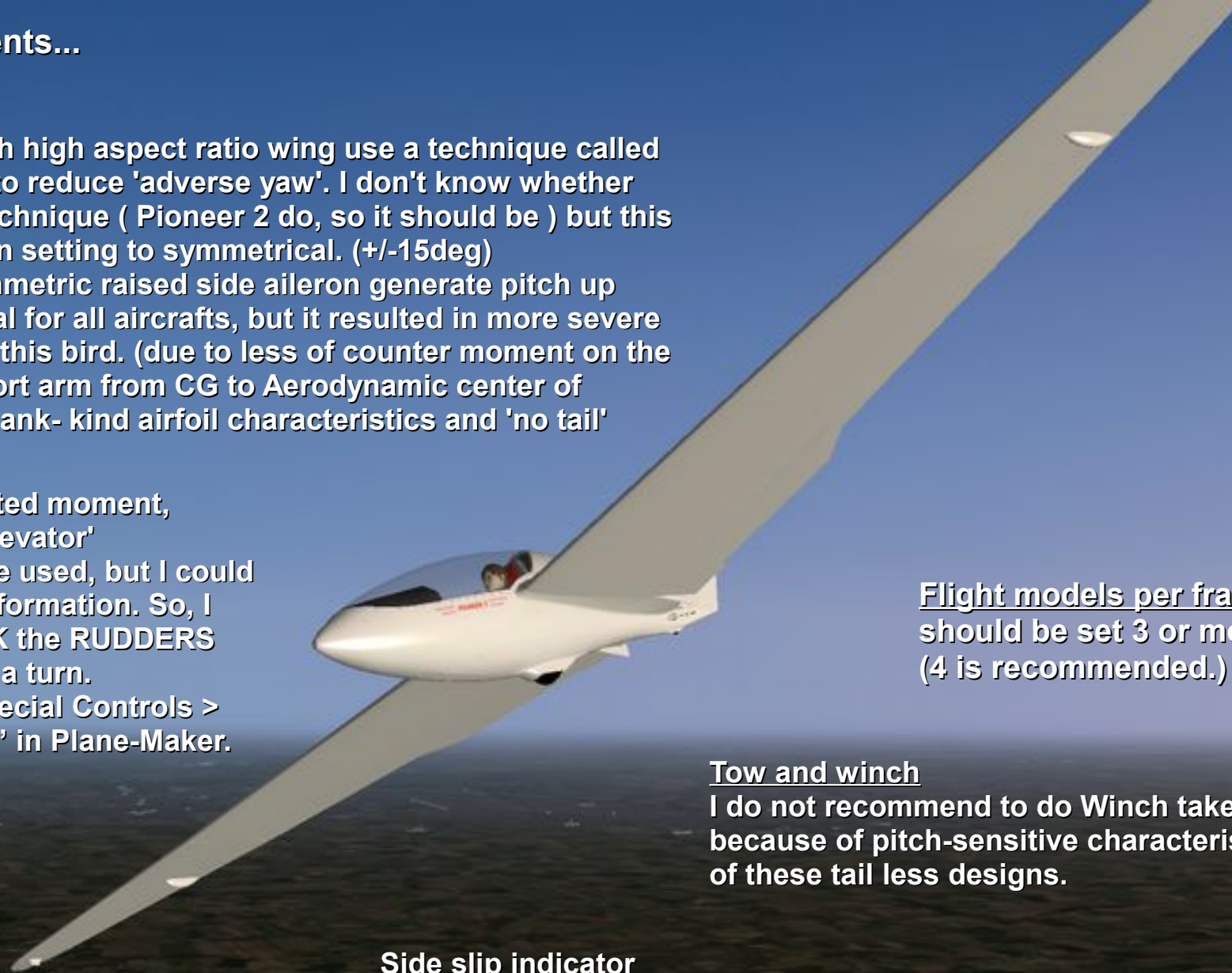
Flight models per frame  
should be set 3 or more.  
(4 is recommended.)

### Tow and winch

I do not recommend to do Winch takeoff... because of pitch-sensitive characteristics of these tail less designs.

### Side slip indicator

Also, I could not find out if Pioneer 3 has a side slip indicator from its Cockpit photo. Yes, as you expected, they might use woolen yarn. This time I did not model the string, instead, you can download really nice "3-D Yaw String" by propsman from <http://forums.x-plane.org/index.php?app=downloads&showfile=369> I confirmed it works fine, and some misc objects parameters in Plane-Maker have been set already for that :- ) Thanks propsman !



## Note

This is a glider category, free aircraft add-on for X-Plane 9.7 and above developed by Yusuke Kanemoto.

Please go to marske aircraft ( <http://www.marskeaircraft.com/> ),

Kollman Composites ( [http://kollmanwings.com/Home\\_Page.php](http://kollmanwings.com/Home_Page.php) ) for more information.

I have never contacted with Mr. Marske nor other officials, but I have just gathered references, pictures, etc, from the Internet Web pages. So, remember that original design and related rights are retained by Mr. Marske and other officials. Also, this add-on is not official one, and I do not guarantee that this add-on has correct data. (e.g. geometry, flight characteristics, equipments and so on.)

This aircraft and all the files joined - except for "gear.wav" in Sounds\system folder ( clipped from X-Plane default gear sound ) - are under CC BY-NC 4.0. ( <http://creativecommons.org/licenses/by-nc/4.0/legalcode> )

You can share/modify my files but you must consult with Mr. Marske or other officials when you do commercial related things. I do not have any rights to permit that and any relation to Pioneer 3 developers



## Credits

Special Thanks to Jim Marske for developing this incredibly beautiful bird.

/// Austin Meyer and X-Plane team ([www.x-plane.com/](http://www.x-plane.com/))

/// Marginal and der-On / Xplane2Blender git hub members

<http://www.marginal.org.uk/x-planescenery/tools.html>

<https://github.com/der-On/XPlane2Blender/wiki/>

/// Danklaue for great tutorial videos on Xplane2Blender script

<http://www.youtube.com/user/danklaue>

/// Blender <http://www.blender.org/download/get-blender/>

/// Gimp <http://www.gimp.org/>

/// Audacity <http://audacity.sourceforge.net/download/>

/// OpenFOAM <http://www.openfoam.com/>

/// Javafoil <http://www.mh-aerotools.de/airfoils/javafoil.htm>

Feb, 2014  
Thank you.