

Kerbal Space Program - Bug #15097

heatshield undeployed aerodynamic drag excessive

05/02/2017 04:36 PM - boolybooly

Status:	Investigating	Start date:	05/02/2017
Severity:	High	% Done:	20%
Assignee:			
Category:	Gameplay		
Target version:			
Version:	1.2.2	Language:	English (US)
Platform:	Windows	Mod Related:	No
Expansion:			

Description

when building low tech craft in the VAB if you place a heat shield under the capsule it raises the drag point towards the capsule massively, when it should not because is in line and shrouded.

this is what is toppling starter ships

See screenies for a comparison with heat shield in place and absent.

History

#1 - 05/04/2017 09:23 PM - Starwaster

That's probably happening because there's two nodes that can be attached to on the bottom. If one of them is attached to (the one closest to the top node) then the bottom is fully shielded and generates no drag. But if the bottom most one is attached to then the bottom is NOT occluded and can generate drag.(checked this by attaching to each one in turn and checking the context menu with aero data enabled) I don't know what it looks like internally when it checks for occlusion but IMO it needs to check if **ANY** nodes facing a given direction are attached to and if any of them meet the criteria for occlusion then it that facing is occluded.

#2 - 05/05/2017 10:41 PM - boolybooly

I just tested this in stock only and it makes no difference which node the rest of the craft attaches to for the blue center of lift / drag marker, which stays in exactly the same place.

Whereas, if you remove the heat shield in the VAB the blue marker moves markedly.

Even after careful quantitative flight testing, the attachment node made no difference to the flight characteristics, but interestingly removing the heat shield made much less difference than you would expect from the shift in the blue marker.

However if you fly the craft with the heat shield and stabiliser fins set up so the blue marker is in front of the center of mass it does not act as though it is i.e. it is not unstable as you would expect with a plane set up like that (without a heat shield in previous versions). It acts as though the blue marker is behind the mass marker unless the blue marker is considerably in front of it, when it then acts as you would expect.

If you do this without a heat shield the blue marker is in about the right place for the physics you get.

So I wonder if the blue marker is accurately reflecting the flight physics when a heat shield is attached?

There is no question the heat shield moves the blue marker a lot in the VAB.

#3 - 05/10/2017 08:27 AM - Starwaster

boolybooly, the marker isn't an adequate indicator because drag is directional and controlled by the part's drag cube, which you can only quantitatively measure in flight by enabling aero data in the context menu. (alt-F12->Physics->Aero).

The aero data provides drag information for six facings (XP, XN, YP, YN, ZP, ZN = XYZ axes + negative / positive)

When examining the drag cube data in that fashion you can in fact see that if one bottom node is attached to that drag is not generated for the bottom. If instead the other bottom node is attached to then the shield is generating drag on the bottom.

Going by the blue marker alone is not enough

#4 - 05/10/2017 08:47 AM - boolybooly

OK, I think for my purposes as a player, if the blue VAB marker does not show the flight characteristics reliably, then its a bug that needs fixing.

If the two attachment nodes make a difference then it ought to be made evident via the UI.

#6 - 06/03/2020 04:35 PM - Robert.Keech

- *Status changed from New to Investigating*

- *% Done changed from 0 to 20*

Files

screenshot261.png	2.34 MB	05/02/2017	boolybody
screenshot262.png	2.29 MB	05/02/2017	boolybody