

Kerbal Space Program - Bug #528

failed fuel flow using ducts with a split and rejoin

04/08/2013 07:43 AM - m_pink

Status:	Closed	Start date:	04/08/2013
Severity:	Low	% Done:	100%
Assignee:			
Category:	Parts		
Target version:			
Version:	0.19.1	Language:	English (US)
Platform:	Any	Mod Related:	No
Expansion:			

Description

The craft and screen shot included probably explain better than i can with words but ill give it a go.

Steps:

- 1) Split the flow from an single tank (outer stage) in to two other tanks(middle stage).
- 2) Join those two tanks back into a single tank with an engine on the bottom(final stage).
- 3) Do a test fire on the pad and observe the fuel flow.

Expectation:

I expected the the fuel to be taken 1st from the outer stage, then the middle stages with an equal flow and then the final stage.

Result:

The outer stage and 1 of the tanks from the middle stages are depleted equally.
Then the 2nd tank from the middle stage is depleted and finally the final stage is used.

If you were trying to use this fuel layout in true flight it results in a catastrophic weight distribution :(

History

#1 - 04/08/2013 10:41 PM - Anonymous

- File *FuelMarkedUp.png* added
- Status changed from *New* to *Confirmed*
- % Done changed from *0* to *10*

Ok, I figured out what it's doing.

Testing

Windows 7 x64, 19.1 fresh install with the attached .craft file.

Result

The issue appears to result from the order of placement of the fuel ducts.

As a convention, in the following description the "BA" node is a fuel duct from B into A, "CD" node is a fuel duct from C into D, and so forth.

I have attached a fresh, labeled, screenshot.

Description

When the .craft file is loaded up, the following connections exist:

- AD
- BA
- BC
- CD

When the engine is throttled up, fuel tanks *A* and *D* do not have a change in fuel levels. *B* and *C* both decrease at a common rate.

If the craft is modified slightly, wherein **CD** is placed first and **AD** is placed second, fuel tank *C* will show no change in fuel while fuel tank *A* will

decrease at the same rate as *B*.

If connections **BA** and **BC** are removed, *A* and *C* both decrease in fuel quantity while *B* remains full, as it should.

My final test was to remove **AD** and **CD** and the engine at the bottom of *D*. I then placed two LV-909's, one on each *A* and *C*, leaving **BA** and **BC**. Fuel was correctly pulled from *B*, keeping *A* and *C* full.

Conclusion

Though I realize it's not usually kosher to guess at problems, it appears there may be a bug in parent-child relationships of fuel ducts. My guess is that because *B* is the top-level parent for both connections **AD** and **CD**, it's only using one or the other line to transfer, as if one had connected parallel lines between the same two tanks.

#2 - 04/09/2013 04:45 AM - m_pink

Hummm i am guessing this is due to infinite loop prevention.

If we change the ducts to

- AD
- BA
- CB
- DC

Then we create an infinite loop that can not be traced back to one fuel tank.

The result of this is that *C* is used as the first tank.

In my opinion the cause of the loop (*D*) should be used as the first tank.

Id think this would fix the bug i showed but dose not solve the fuel flow problem totally as i would probably expect that once *D* was empty the engine would stop.

The infinite loop problem should result in all tanks draining at the same speed :rollseyes but i understand that solving that problem would need a total rethink of ducts.

#3 - 11/30/2014 09:26 AM - Squelch

- Category changed from Bug Tracker to Parts

#4 - 11/30/2014 09:30 AM - Squelch

- Status changed from Confirmed to Closed

- % Done changed from 10 to 100

#5 - 05/05/2016 09:46 AM - Tymek

- File Przechwytywanie.PNG added

I was able to reproduce this in 1.1.2

Any chance to change bug state/priority/assignee?

Files

screenshot2.png	789 KB	04/08/2013	m_pink
fuel flow test.craft	7.99 KB	04/08/2013	m_pink
FuelMarkedUp.png	525 KB	04/08/2013	Anonymous
Przechwytywanie.PNG	364 KB	05/05/2016	Tymek