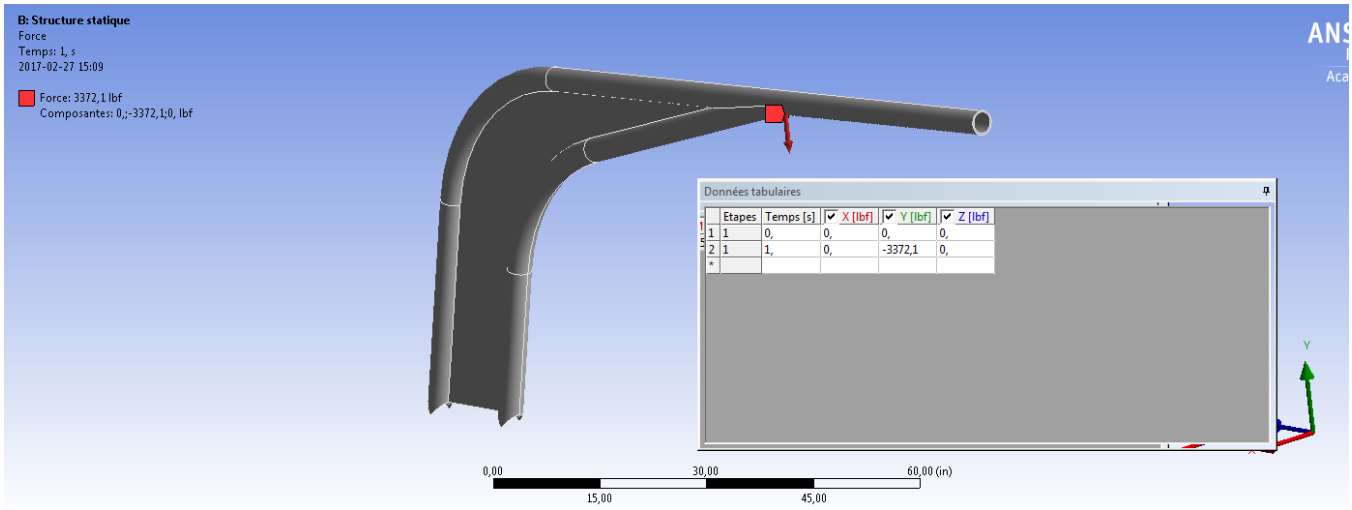
FEA of the Davits

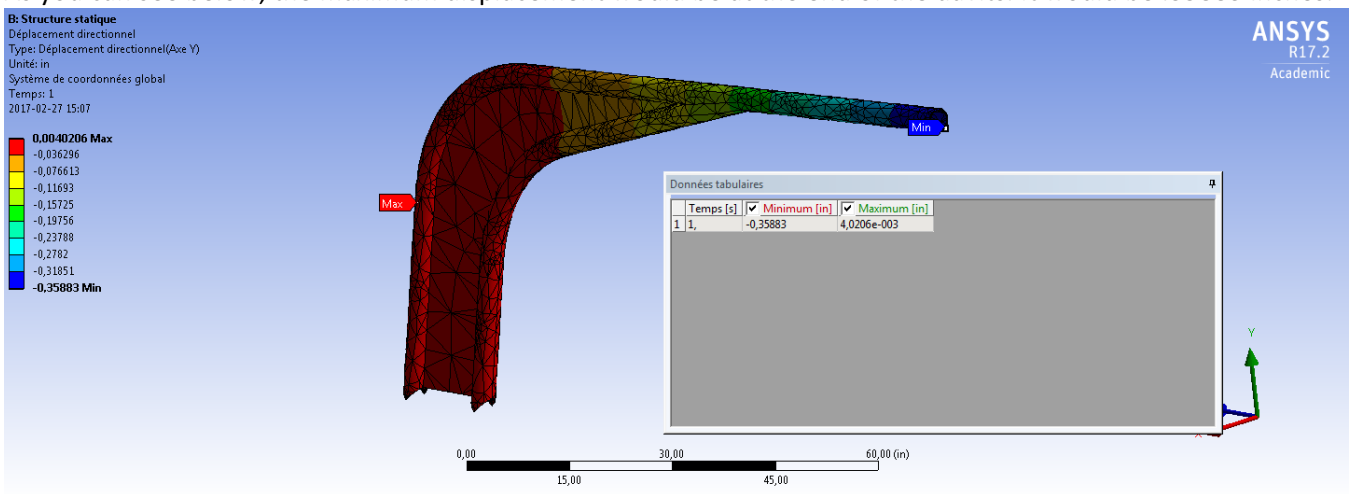
First analysis

Force applied: 3372.1 pounds per davits (Red arrow) so 6744,2 pounds in total
Support: Bottom welded to the boat frame (Fixed)
Material: Steel



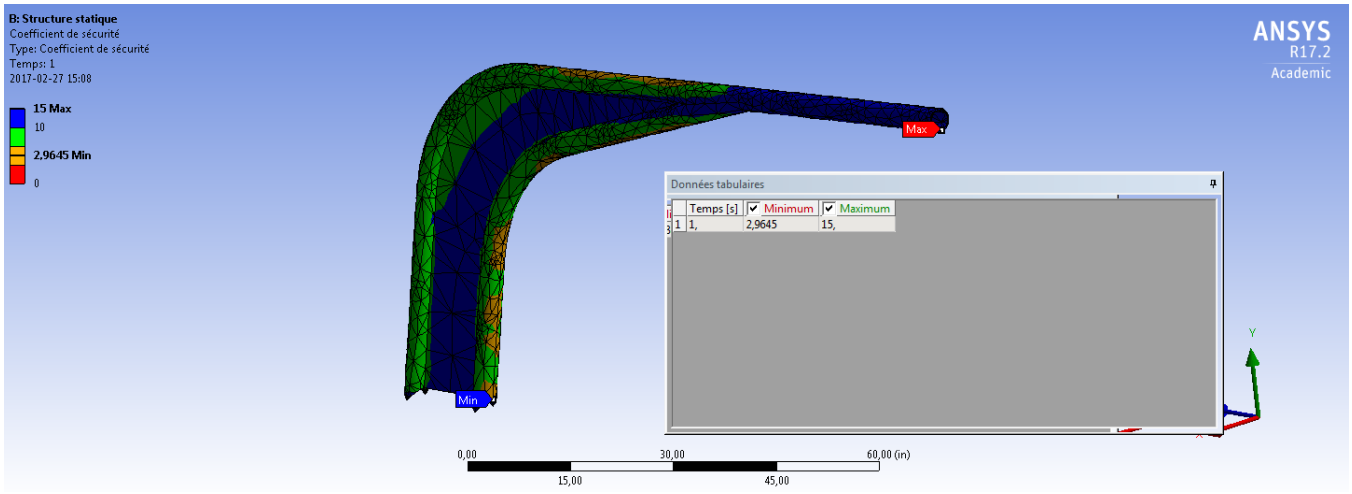
Displacement:

As you can see below, the maximum displacement would be at the end of the davits. It would be .35883 inches.



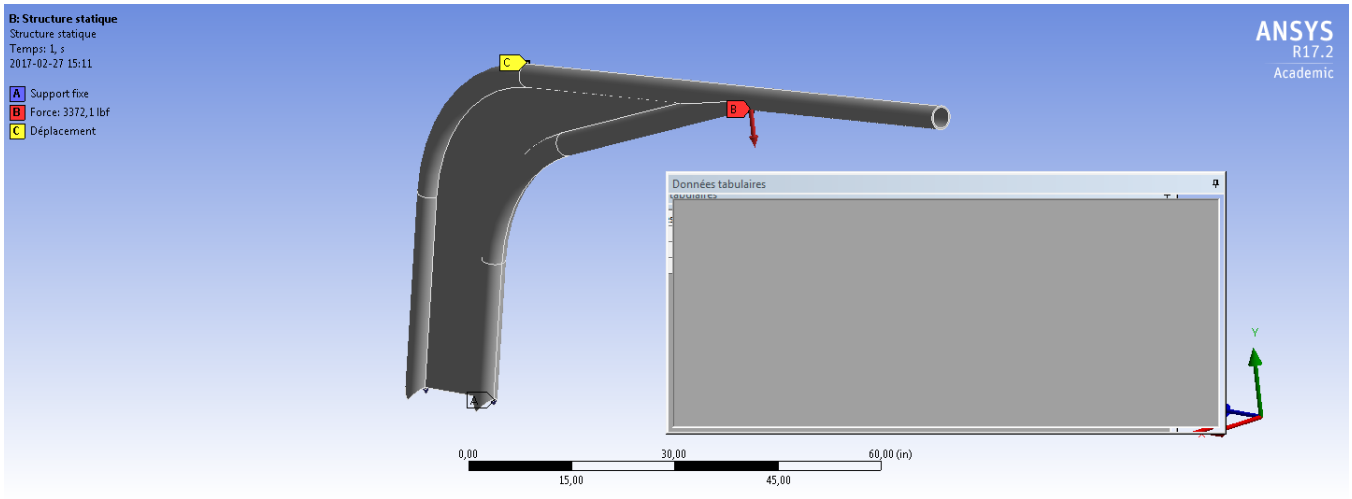
Safety factor:

To find the breaking point on the davits, I used the safety factor. So it is dividing the yield strength of steel by the pressure applied. So we need a safety factor above 1 for it not to break. Because it is a lifting mechanism, I would not go below 2.5. In this first analysis, we can see that the lowest safety factor is at the bottom of the davits. So we are almost at the limits.



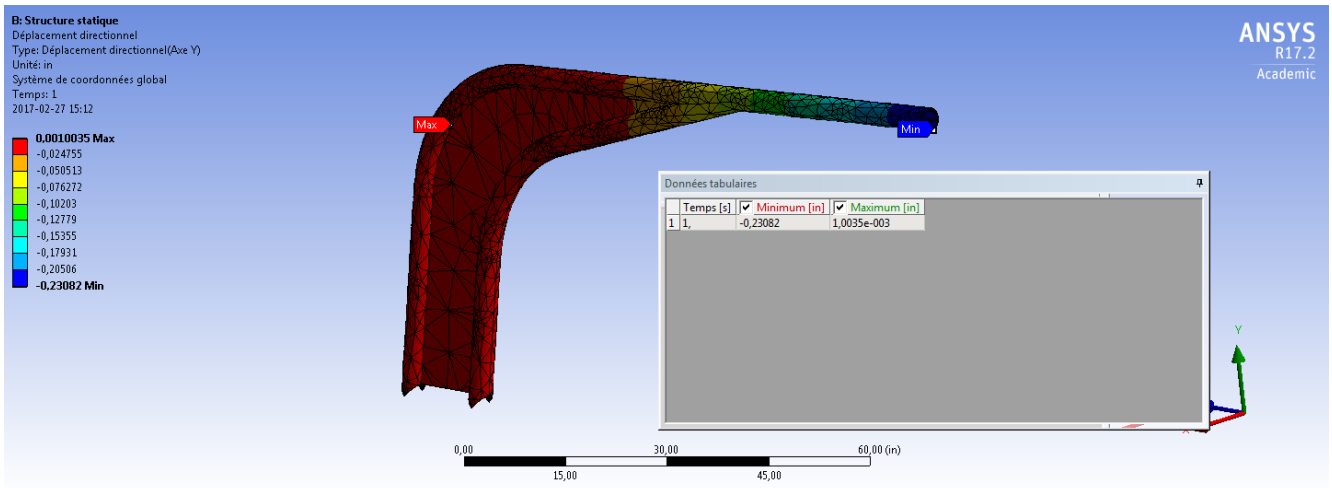
Second analysis

Force applied: 3372.1 pounds per davits (Red arrow) so 6744,2 pounds in total
Support: Bottom welded to the boat frame (Fixed) with a pivot support (Yellow flag)
Material: Steel



Displacement:

As you can see below, the maximum displacement would be at the end of the davits. It would be .23082 inches.



Safety factor:

In this second analysis, the lowest safety factor is where the pivot support is (1.7687). So I don't think I would add the support because it focused all the constraint at the top of the davits.