

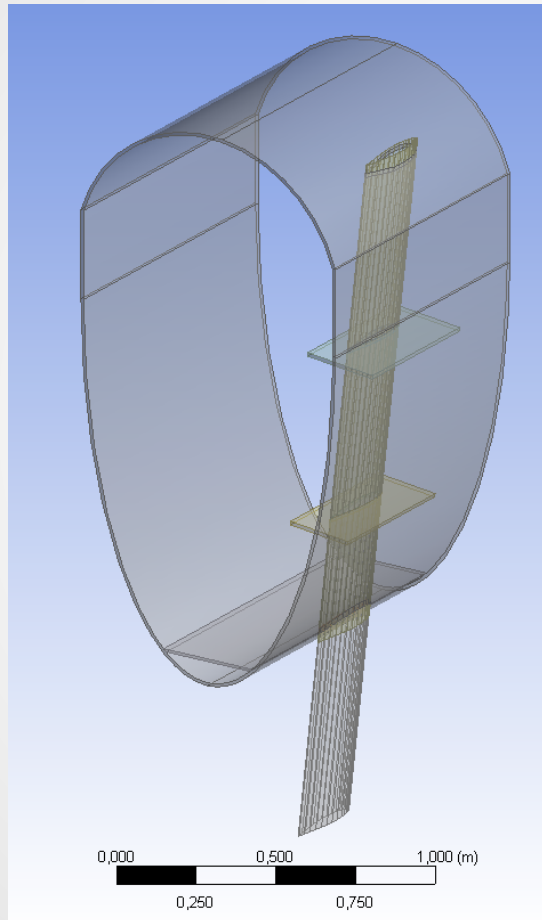
# Cat Hull Stressed by Dagger Board

Studies of typical racer/cruiser hull section with variations

# Overview

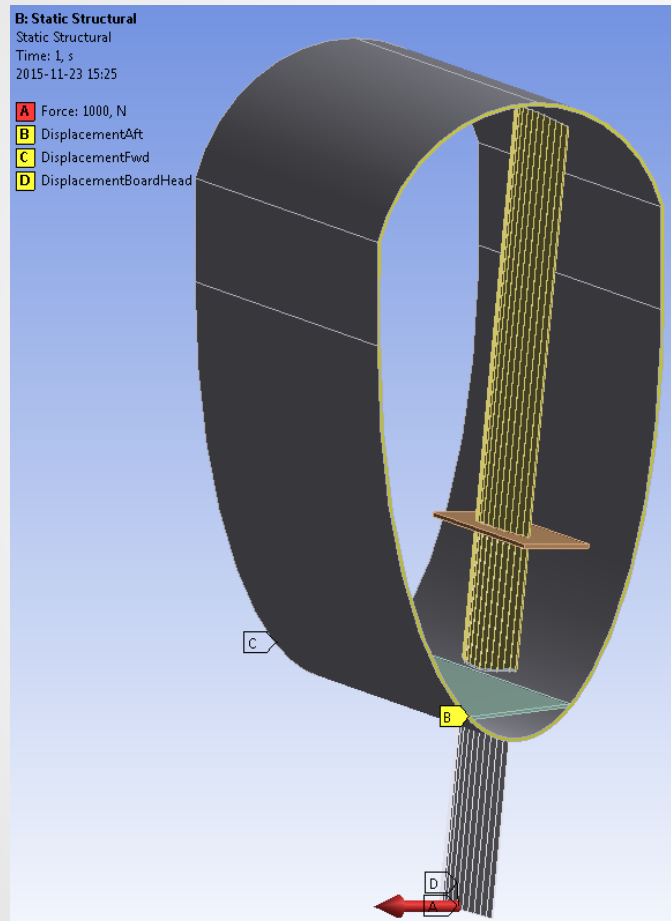
- This study is only concerned with relative merits of different configurations of reinforcements.
- Neither loads nor material data are realistic.
- The geometries of the parts making up the models are reasonably realistic.

# Modelled Geometry



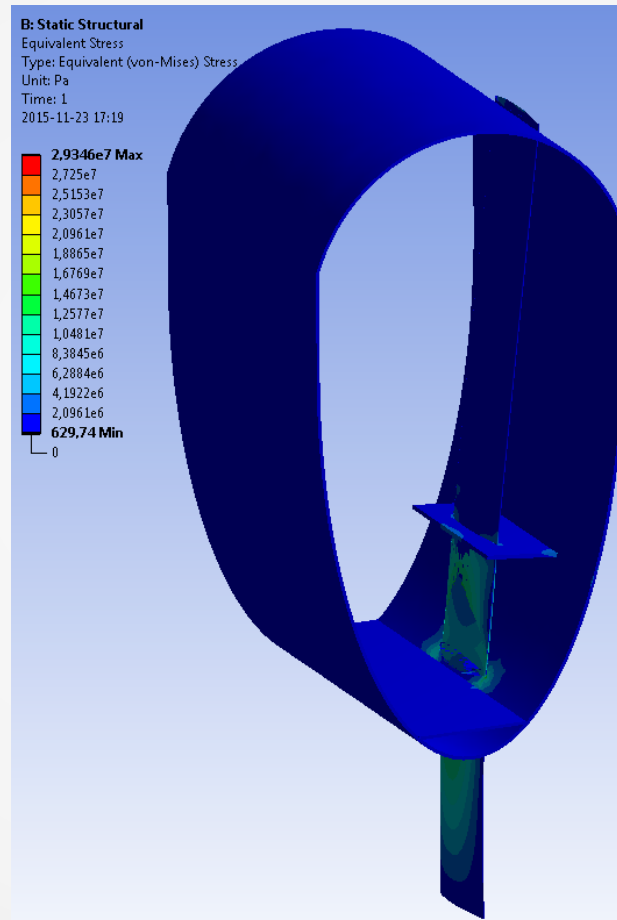
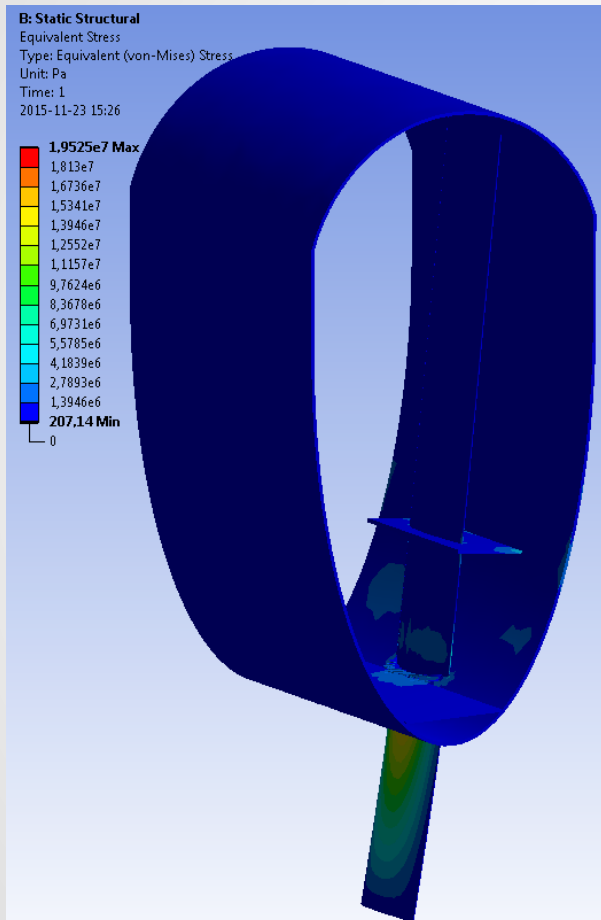
- 1 m long section of approximation of Tennant Wildfire design.
- The presence of reinforcements and floor can be toggled.
- Dagger board length can be varied to utilize different reinforcement arrangements.

# Loads and Constraints



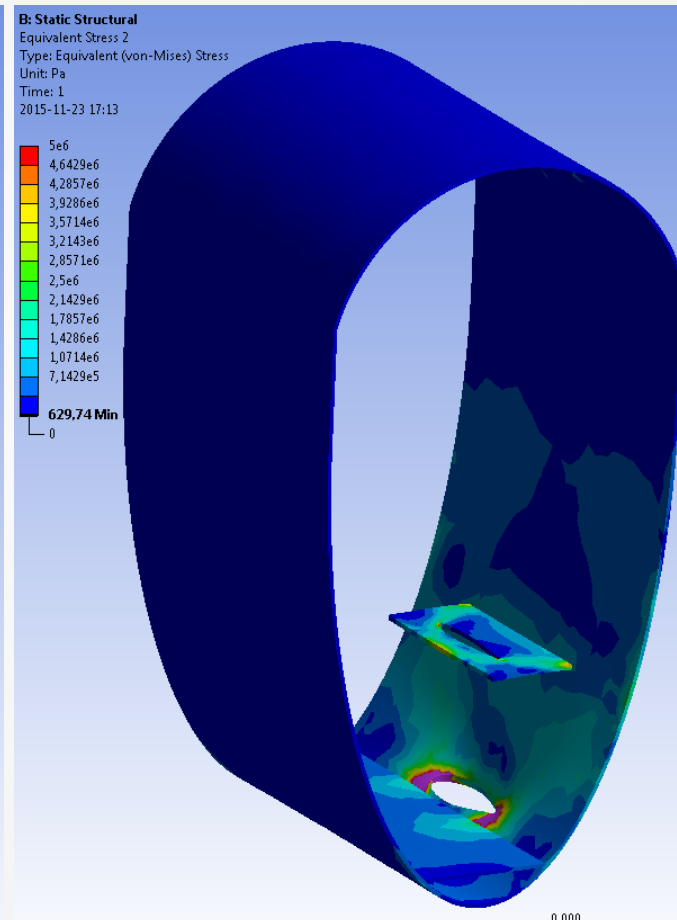
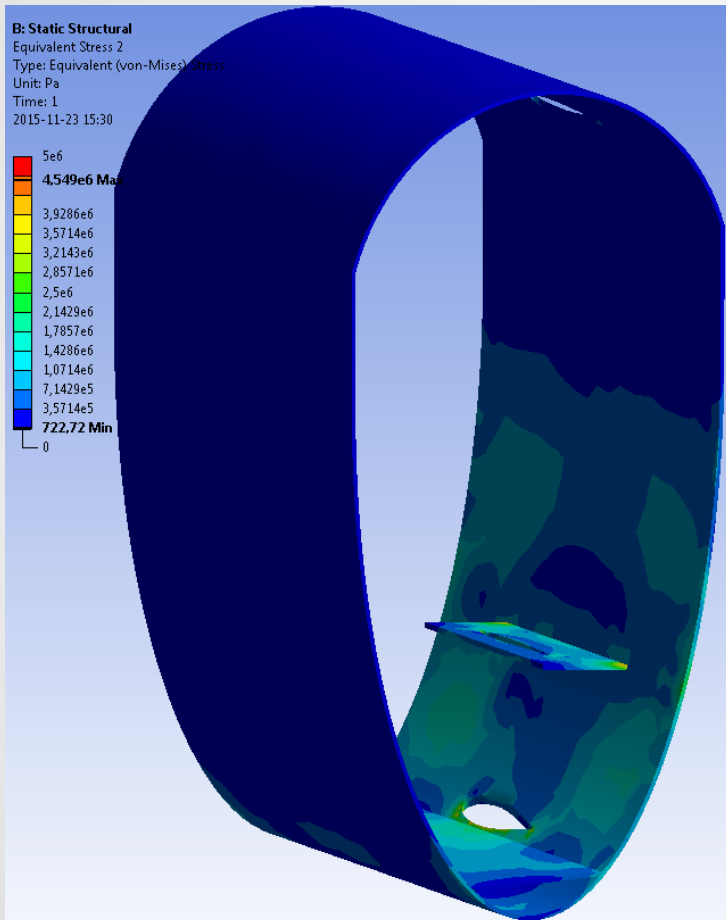
- The end areas of the hull section exposed by cutting it from the hull are fixed in all three dimensions.
- The dagger board is cut off at the centre of effort depth and a side-force is applied here. Its sign can be toggled.

# Over-all Stress Distribution



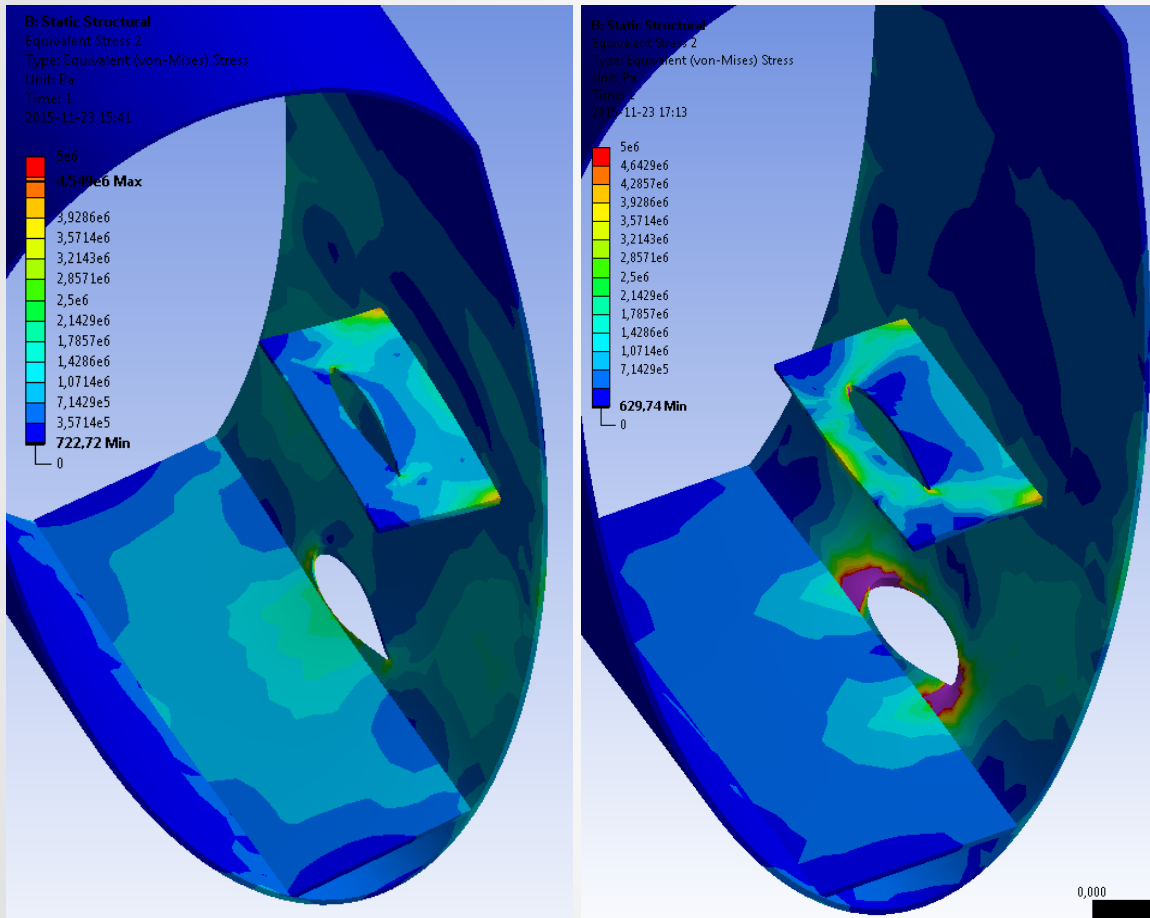
- Highest stress in the dagger board.
- Highest hull stress at dagger board exit.
- The deformation is exaggerated.

# Hull Stress 1a



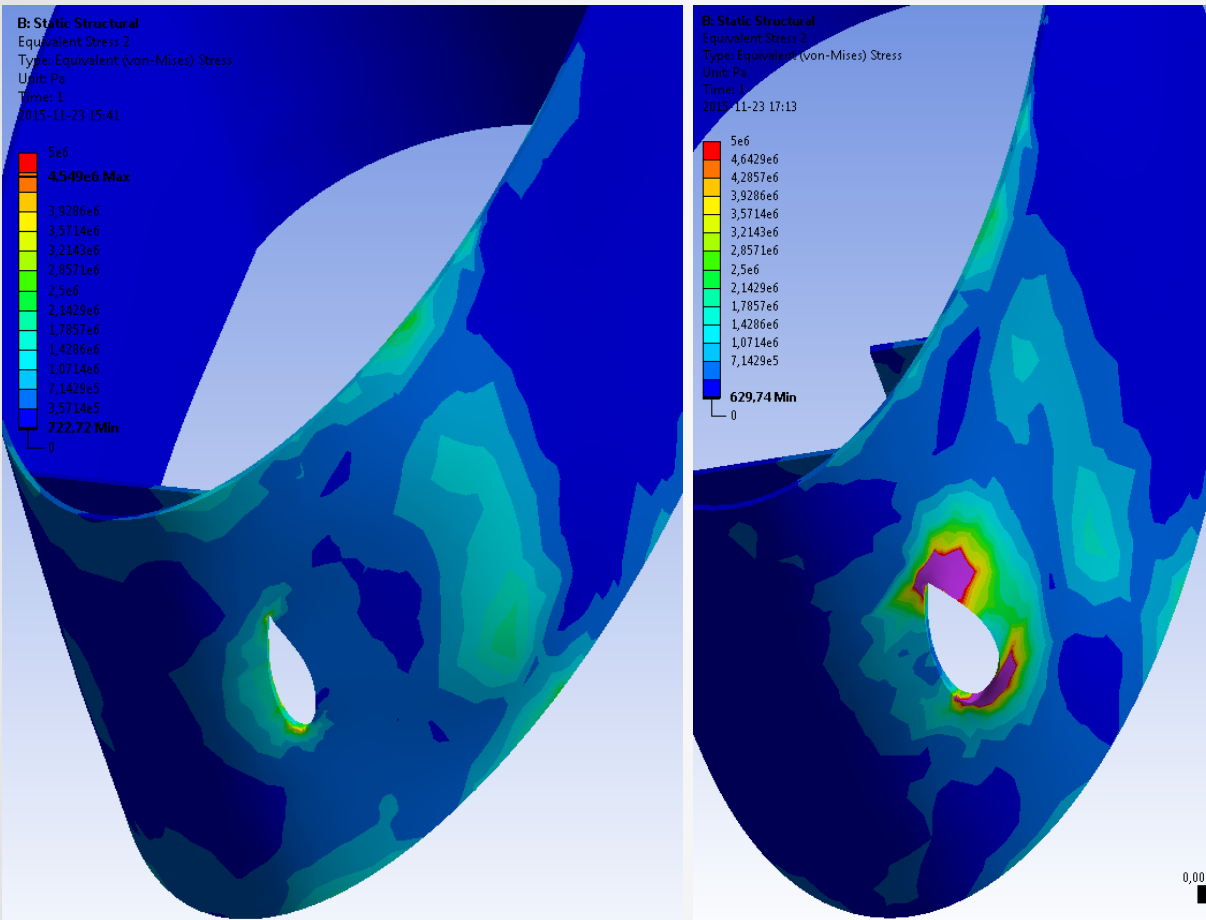
- The hull is worse off when the dagger board pushes away from the floor.

# Hull Stress 1b



- This shows how in the left picture the broadside of the dagger board 'rests' on the floor.
- In the picture to the right it is the angled hull side that supports the board and it flexes away.

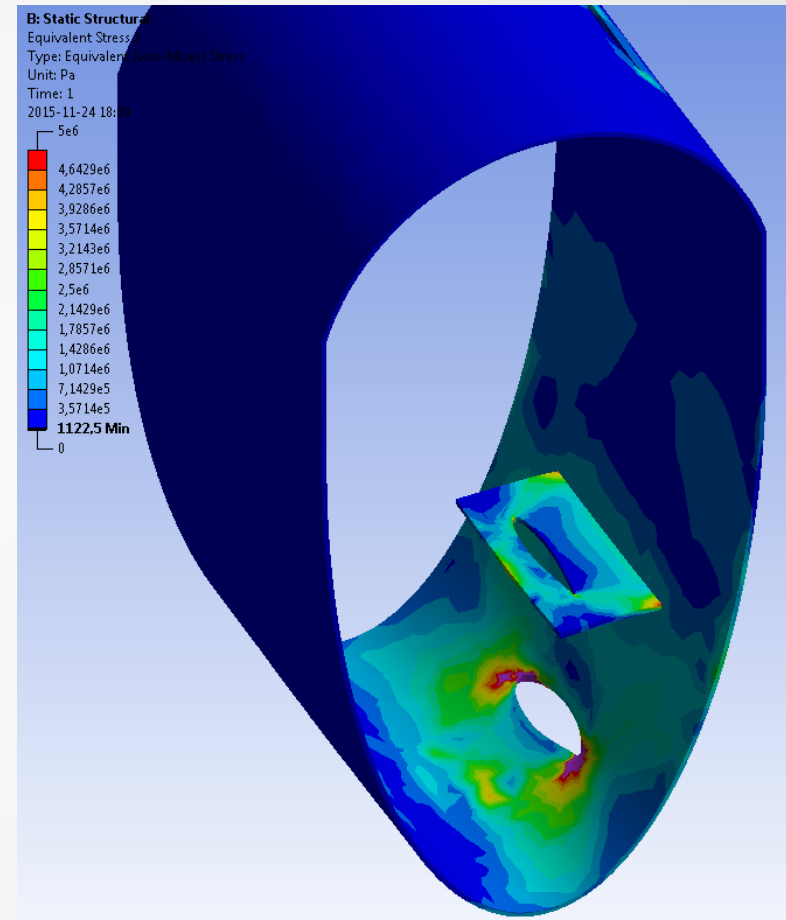
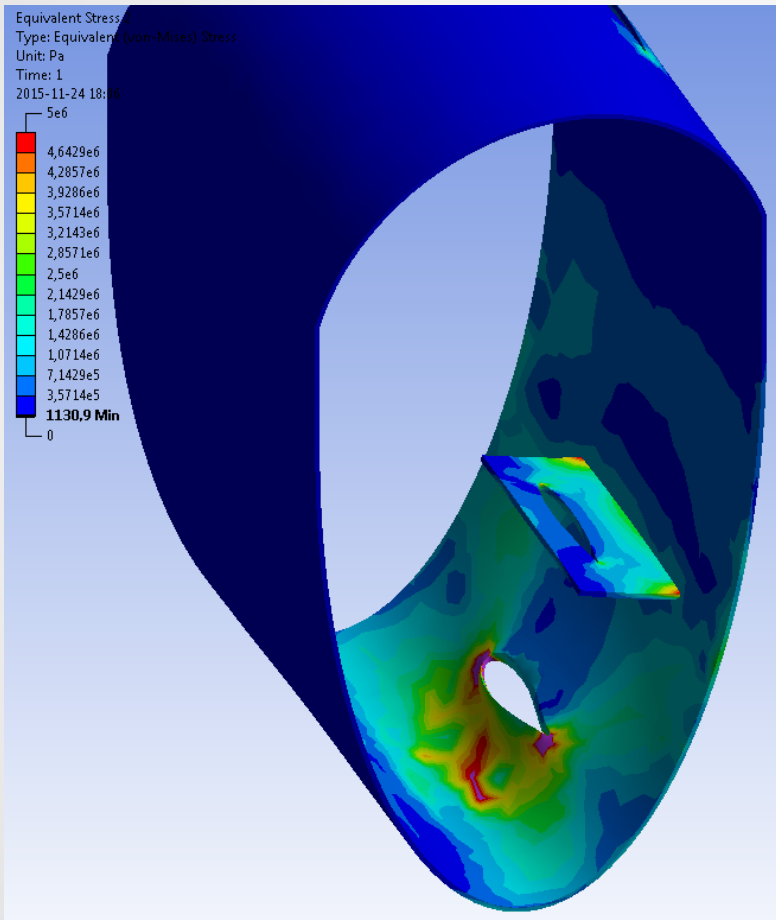
# Hull Stress 1c



- The same story but from below.

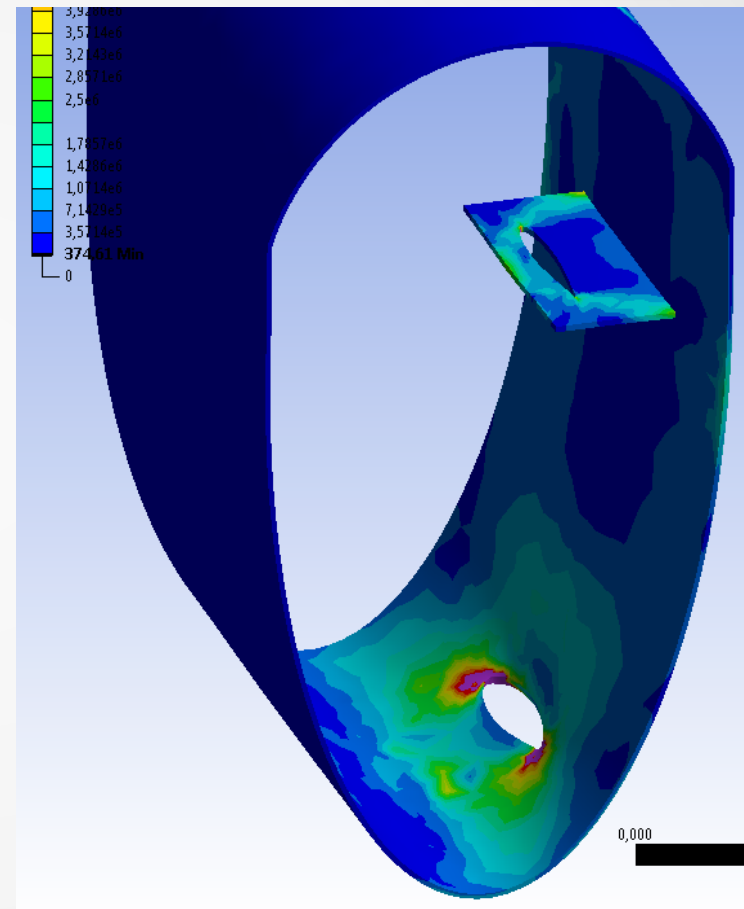
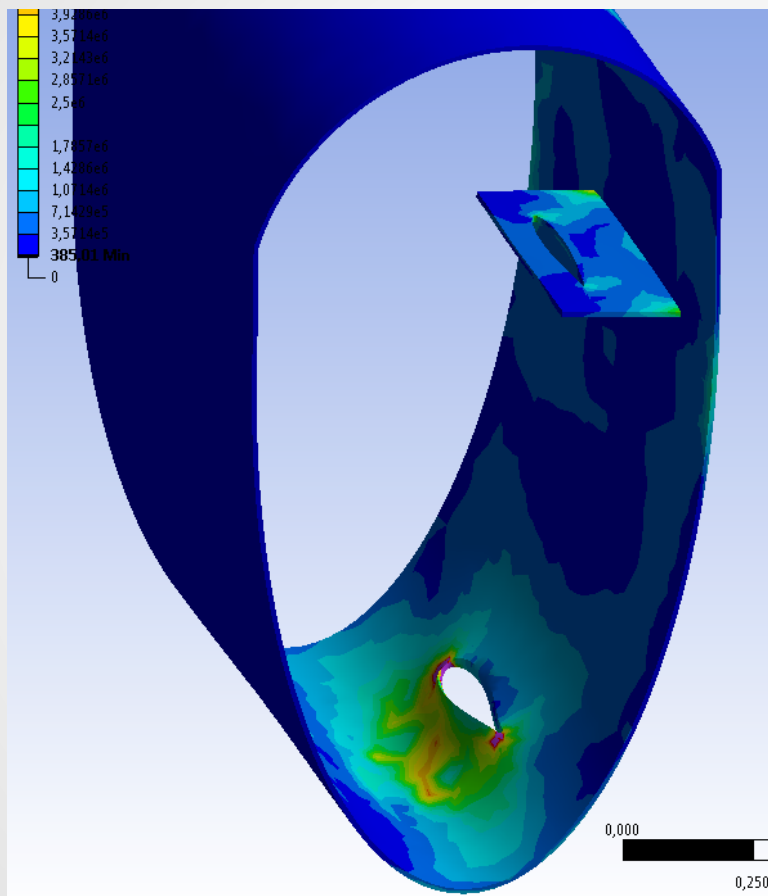


# Hull Stress 2, No Floor



Less difference between tacks now. Peak stress for the case to the right is actually less severe than with floor.

# Hull Stress 3, Longer Board



Hull stress is reduced by having a longer board and increasing the distance between the the upper support and the hull exit.