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# Adjustable Pipe Hanger: Newport News Shipbuilding

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**Sponsor:** Newport News Shipbuilding

MECHANICAL AND NUCLEAR



# Adjustable Pipe Hanger

## Newport News Shipbuilding

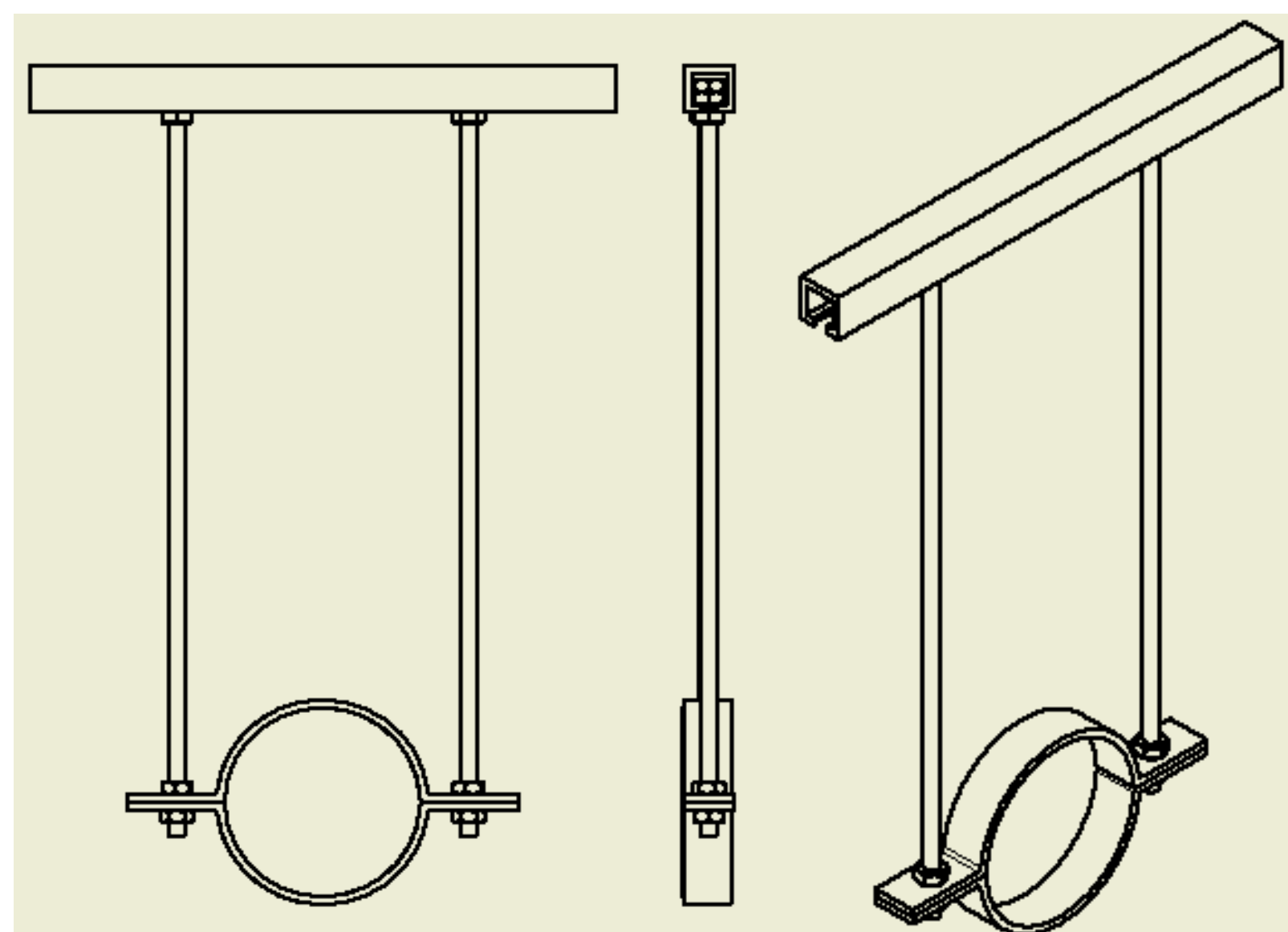
CAPSTONE DESIGN  
EXPO 2016

### Objective

The challenge for the project was to design an adjustable pipe hanger that could be coated with the special paint yet still have the freedom of being adjustable. What this accomplishes is so that there is no downtime and less cost between adjusting pipe hangers, as there would be no need to spend the time and cost in having to put another coat of paint on the hulls.

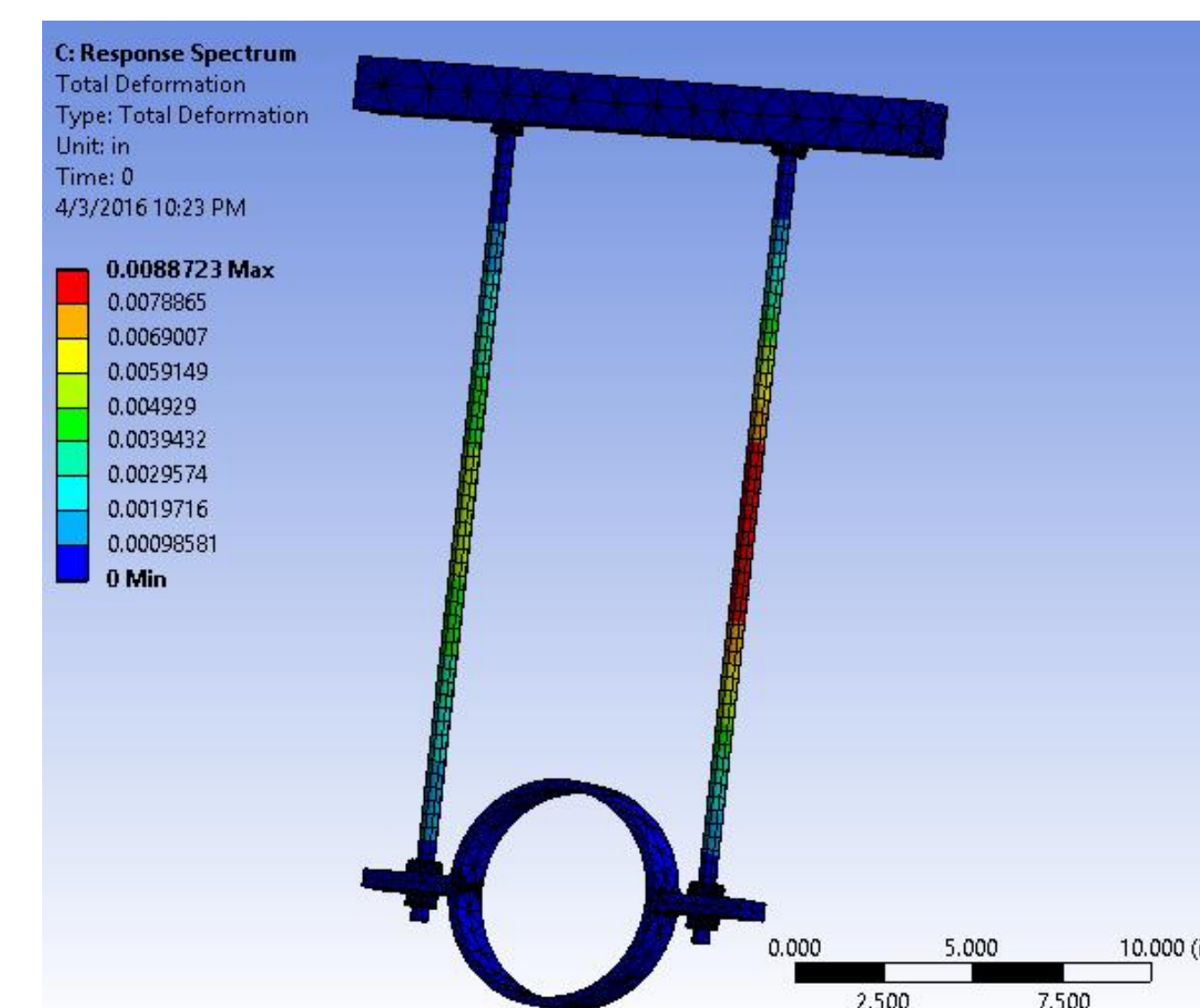
### Team Design

Below shows the considered design for the Adjustable Pipe Hanger. The parts include a C-Channel track, two rods, clamps, ten bolts and two washers.

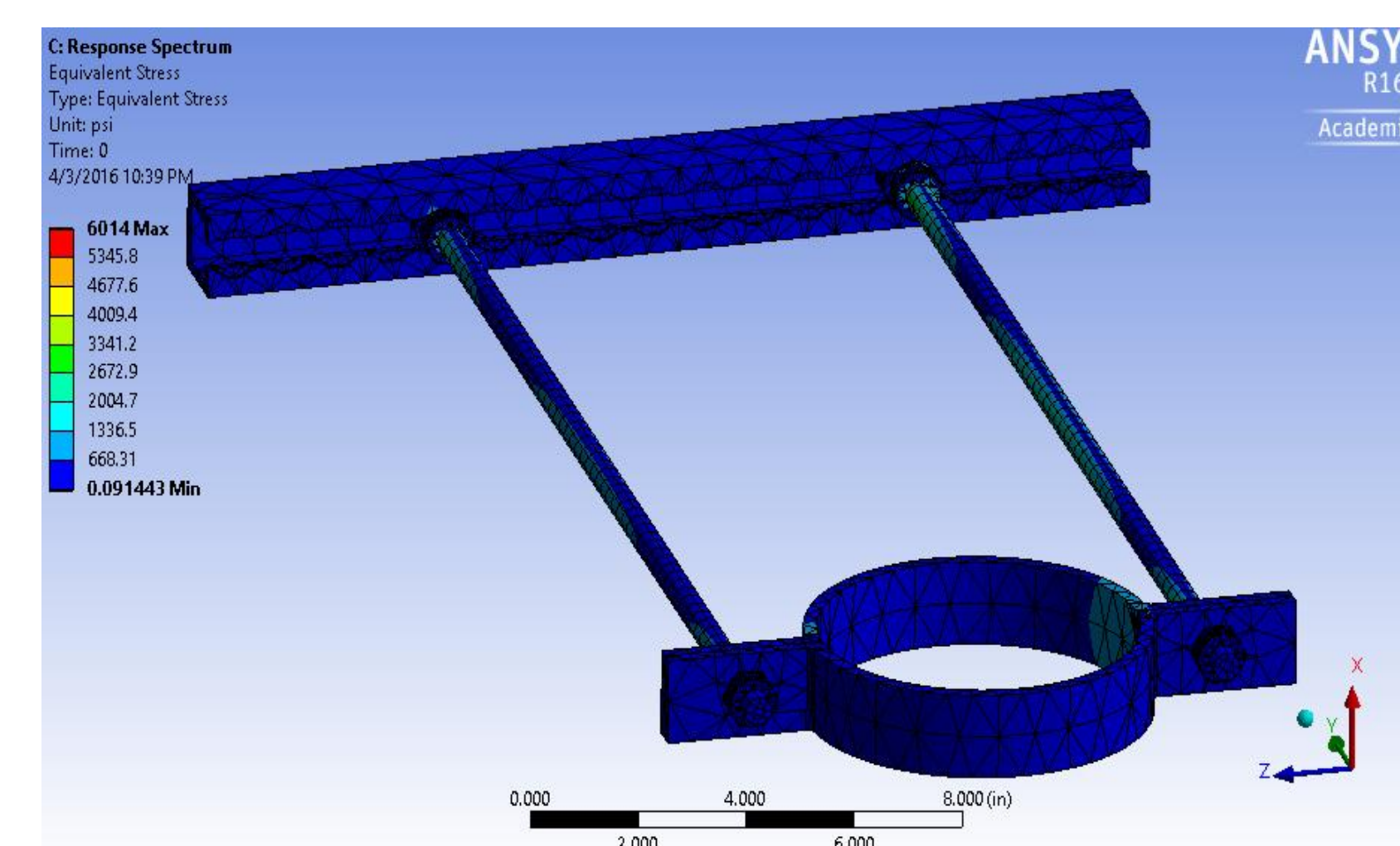


### Testing and Results

The adjustable pipe hanger is to withstand a 6 inch diameter pipe of 250 lb weight with kick-off velocity between 100-120 in/s. Below shows the response spectrum on the design. A maximum total deformation of 0.009 was created after the application of 250 lb load and velocities 100-120 in/s.



Below shows a maximum total stress of 6014 psi create by the load and velocities, which is well below the tensile and compressive yield strength



### Conclusions

The pipe hanger model was designed and tested for a 6 inch diameter pipe. While the FEA tests shows promising results should the pipe size used be larger, such as 8 or 10 inch pipe, a new FEA test should be performed and analyzed before deciding on using this model for larger pipes or modify it. Also, the track length should be increased in order to allow adjust the position of the hanger on the track 4 inches either side of the track from its center if larger pipes used. For 8 inch pipe the track length should be at least 19 inches and 21 inches for 10 inches pipe.

### Acknowledgements

We would like to thank Newport News Shipbuilding along with the VCU school of Engineering for the opportunity to work on this project. We would also like to thank Professor Gulla for his support and encouragements with this project.



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