Deliverables for Grip and Thread stress lab

Write a brief report that summarizes the lab. It should include the following:

Introduction: Brief intro to the lab that describes why you did the lab and what engineering methods it covered.

Experimental Procedure: describe how you modeled the bolted grip and the bolt/nut. Why you modeled them as you did and what process you went through to evaluate the results. Be certain to include the dimensions of the components. Include numbered figures with figure captions, and refer to the figures, by number, in the body of the report. Be certain to also include a snapshot of your spreadsheet and the resulting member stiffness you calculate for the same problem you modeled in CAD and evaluated using FEA.

Results: Detail your findings and explain any differences between the theory and your FEA results.

Conclusion: A brief summary of your findings.

Be certain to address the following:

1. Show a fusion 360 model of the 2 plate 1 washer system, including component dimensions and the relevant mechanical properties.
2. Describe your load and your constraint. Check that the reaction force makes sense.
3. Extract the displacement from the midpoint of the loading annulus on the top side using a point probe.
4. Compare the stiffness you found using your spreadsheet to the stiffness you extract from the FEA. Remember to always use the same elastic modulus in your spreadsheet that was used in your FEA.
5. Change the bottom plate to steel, keeping all thickness the same. Compare the resulting member stiffness extracted from FEA to that calculated using your spreadsheet.
6. Take a slice plane through the middle of the assembly for both cases listed above. Adjust the legend and compare the results to the frustum model. Comment on any differences.
7. Show a model of the bolt and nut assembly. Describe the constraints and the loads, and discuss the load transfer between the nut and the bolt across the threads.