Deliverables for the diesel engine 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 factors of safety that you calculate. Make sure to include a section view of the head/block interface that shows the 'gasket' pressure distribution at that interface. Use a point probe to find locations of minimum contact pressure.

Results: Detail your findings and explain why/if the design had any inherent deficiencies. Be sure to address the key tasks that were outlines in the original assignment.

Conclusion and Recommendations: A brief summary of your findings with recommendations.

Be certain to include the following, in some form:

Tasks:

1. Validate the internal pressures that occur during the power stroke. Use that to calculate loads on the 'head'.

2. Validate bolt sizes and torques to achieve the given loads.

3. Calculate the bolt and member loads, as well as the bolt and average member stresses across the gasket. For simplicity, you can treat this as a cylinder with a flat cap and look at a cross section of the simple system. Studs are threaded into the block, then nuts are used to compress the head (cap) onto the head (cylinder).

4. What is the grip length?

5. Why is the grip length so long? Does this influence gasket clamping pressure?

6. Use your spreadsheets to find all the factors of safety for a bolted connection.

7. Why did the next generation engine increase the bolt diameter to 16mm?