Hunter Young

Professor Ayala

Fluid Mechanics

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MET330 Hunter Young Test Reflection 3

1) How and why the test demonstrates your work toward one, or more, of the course learning objectives. Be specific on the course objectives you decide to mention.

The course objectives that I believe I demonstrated most clearly in the exam are “Explain the fluid dynamics in pipes and fittings,” “Apply the principles of conservation of energy (Bernoulli’s equation) and mass to fluid flow systems,” and “Compute friction losses in pipes for a variety of configurations (series, parallel, network, etc.)” In my test it is clearly shown that I have an understanding of how to apply the friction losses with different pipes and fittings to Bernoulli's equation, as all three objectives were needed to solve the problem.

2) How your test compares against the available solution. State the mistakes you made and what you will do next time to avoid making the same mistakes. Please point out exactly where you made the mistake, say why you made the mistake, and how you should have done it. If you were taking this test again, what advice would you give yourself to ensure that you had a successful test?

The first mistake I made was not taking into account the minor losses that would occur from compression and expansion, even though I did take into account the fact that the branch was a smaller sized pipe. If I had taken these into account and added them to my Bernoulli's equation I believe that I would have gotten the entire solution correct. I'm not sure how I managed to overlook something so plain in the problem, but in the future I will make sure to take a step back and make sure I haven't made any incorrect Assumptions.

The only other mistake I could have made was in the excel I created for the iterations, as no matter how many times I checked my formulas I still got a smaller flow rate than the original. I've gone back over it with the rubric and I still cannot find where my mistake is, so I assume that the mistake is that I didn't take into account the extra minor losses. However if I am wrong and that would not be a reason for my excel to be wrong, I would greatly appreciate going over my excel with you to find where I went wrong, as I have not found anything this frustrating in a while.

3) What your grade should be. Base it on the writing rubric provided in the test and the correctness of your solution. What are the strengths and weaknesses of your test?

Based on the rubric given to us through blackboard, I would give myself a 72/90 in this order. (It's a shame the writing rubric wasn't used, I followed it anyways to organize my thoughts)

- PROBLEM 1 or 2)
  - Reasonable assumptions (reductions, valve, tubing diam, lengths) 1/10
  - Apply Bernoulli twice or get 2 equations from Bernoulli 1/10
  - Consider ALL minor losses? Handled them correctly? 1/10
  - Handled correctly the pipe losses? 1/10
  - Obtained 3 equations with 3 unknowns? 1/10
  - Solved system of equations correctly (Excel?)? 2/10
  - Final results 1/10
- **TOTAL** **8/10**

FINAL GRADE:

(90)*(8/10) = 72

I think that this test shows my strength in using Bernoulli's equation, as well as manipulating the minor losses within it to give me equations that I can then use to iterate. I'd like to think that it shows my strength in making an excel, as most of my numbers seemed to be correct up until the end, but I know that makes it a weakness. I just hope it is only a small weakness and I just need a little more practice proofreading excels.

4) Discuss the following:

a. What issues did you encounter in completing the test? How did you troubleshoot them?

My biggest issue with the test was making assumptions about the relationship between velocities between different points, and making sure I had the correct minor loss equations. To troubleshoot I texted you and consulted with the Textbook

b. What steps did you take to complete the whole test? Would you change something?

I spent a lot of time on the problem, and even more time double checking my work. If I could I would have spent more time double checking the things I assumed I could not have gotten wrong.

c. What new concepts have you learned?

I don't think there were any new concepts on this test, we went over everything at least once in class.

d. Where do you think engineers use those concepts (provide specific examples)?

I believe that the concepts in the test would be used when designing piping systems with specific parameters, like a fire suppression system or a pool filtration system.

e. Where do you think you will be using everything you learned?

I hope to use everything I've learned in whichever part of the industry I go into, hopefully something to do with building moving systems, rather than stationary ones.

f. Do you think what you learn is important for your professional career?

I absolutely believe that what I am learning will be important in my professional career. Not just because they are background knowledge, but because these specific skills will most likely be applied in the real world.

g. How, when, where and why you might use this information or skill in the future?

I could see myself using these skills when designing a buildings fluid pumping system, if that is the line of work I end up in. But I could also see myself using them to pick pipes for engines and such.

h. Have you been able to apply concepts you have learned in the course to what you do at work or in other courses?

Unfortunately not yet, nobody at my online job has asked about anything remotely related to Bernoulli's or minor losses, however this information does provide some background knowledge for my thermal applications class.

i. What areas did you feel you were most successful, or improved the most?

I think that I was most successful with Bernoulli's equation, and I improved upon my ability to manipulate the equation with multiple minor loss variables.

j. How do you see this course's content intersecting with your field or career?

I could see the content in this course helping provide background knowledge for a project that involves pumping fluids, or it may end up being my specialized field in my career.

k. How much time did you spend on the test? How was the time organized? What would you do differently? Why?

I spent about 2 hours on the first part of the problem, then the next day 2 hours on the second part and another at least an hour and a half trying to figure out why my excel spreadsheet was giving a smaller flow rate. If I could go back, I'd have started a day earlier so that I could have an entire day to try and figure out my mistake. I think given the benefit of a day to take a step back and look at the problem again, I would have caught the two minor losses that I missed.