	ODU MET 330 Fluid Mechanics	Test # 3 Reflection

1. Test #3 covered the following course objectives:
   - Compute friction losses in pipes for a variety of configurations (parallel, network);
   - Compute friction losses in pipes and fittings;
   - Learn how to use excel to solve fluid dynamic problems;
   - Apply lessons learned throughout course to analysis "what is needed to improve the system".

   1) The system sketched in the figure is an automatic sprinfler system for a narrow plot of lawn. Water is supply by a main that guarantees a constant pressure of 400 kPa (gauge). The sprinkler pipeline is made of schedule-40 steel pipe. For a wide-open ball valve, determine the flow rate delivered to each sprinkler head. Do not neglect minor losses. The characteristic of the system is as follows:

      a. From point where pressure is 400 kPa to the T-joint: 1 ½ inches nominal pipe of 6.5 m.
      b. From T_joint to 1st sprinkler head: 1 inch nominal pipe of 0.3 m.
      c. From T_joint to 2nd sprinkler head: 1 inch nominal pipe of 8.3 m.
      d. K of the sprinkler head is 50.

2. The one key mistake I made on the Test #3 was the distance of the sprinkler head from the main-trunk line of the water supply. This caused me calculate an incorrect equation when applying Bernoulli's equation. I was able to solve for the all of the minor energy losses as we practice in class and one various problem assigned. I should have seen this from the start of the
3. of the problem, but I was not understanding the terminology of the given information. In part b I was not to determine the distance the sprinkler heads from the main water line. To me this seem like a distance from the valve to the sprinkler head, thus it causing my equation to be off. However, I did follow the format taught to us in class for solving this type of problem. In the field, I would have measured the distance of the sprinkler head off the main water line. If had the chance to take Test #3 over again, I would be able to understand and complete the Bernoulli's equation knowing the correct distances for the sprinkler heads from the main-water line. Also, I would work a few more problems from the end of the chapters as well.

   Based on the information I have from the key to the test; I would grade myself as following:

1.	Reasonable assumptions (reductions, valve, tubing diam, lengths)	1/10
2.	Apply Bernoulli twice or get 2 equations from Bernoulli	0.5/10
3.	Consider ALL minor losses? Handled them correctly?	2/10
4.	Handled correctly the pipe losses?	1/10
5.	Obtained 3 equations with 3 unknowns?	1/10
6.	Solved system of equations correctly (Excel)	2.5/10
7.	Final results	0.5/10
	TOTAL	**8.5/10**

FINAL GRADE: **(90) *(8.5/10) = 76.5**

	ODU MET 330 Fluid Mechanics	Test # 3 Reflection

4.

a. Once I completed the three unknow equations, then set then equal to Q1, Q2, and Q3, I found a mistake on one the Energy Losses for a the reducer. I had to redo the equations for Q1,Q2, and Q3.

b. I did the same steps and processes used for the Tests 1 and 2, so I did not change much of how I approached Test #3. I did however, take a little longer breaks, instead of working the problems 5 to 6 hours straight.

c. The new concepts I learn was about single and parallel branches, plus solving these systems using excel and doing it by hand. I would like to use some type of Fluid Dynamic software package in order to become familiar with how it is used in the engineering world.

d. This is a classic and fundamental problems engineers will face in just about any manufacturing company in the industry. I worked on U.S. Navy Submarines and Air-Craft Carriers install piping systems, machinery, heat-exchangers and other equipment. This class has taught me, why plus how certain piping systems were designed. I can know understand why certain systems were not allowed to added a pipe joint or valve in the system, and why valves were added to control the flow rate into a specific systems.

e. I plan in incorporate many of the concepts and lessons, I have learn in this course in the "Shipbuilding courses" I have been designing. Plus, in the course I am currently teaching, there is a section on Fluid Dynamics, so now I have great understanding of the process and how to apply Bernoulli's equation.

f. I believe course helps me become a better instructor by knowing the mathematics, theoretical concepts behind the systems I have installed and worked on various Navy ships.

g. I will be using the information from this course in the MT1 courses I am teaching for John Tyler Community College, Thomas Nelson Community College, plus Tidewater Community College. I have been developing lesson plans for certain course I am current teaching and will teach next semester.

h. I see how this course can apply to other course such HVAC, plus one of my favorite course Refrigeration Cycle. I may take this course during summer if I have the time.

i. The areas I improved the most was using the excel to calculate the problems. Once I sat down and review several videos, I and very confident in my ability to used excel on these type of problems.

j. This course will help me develop a great range of classes and concepts I will be able to teach in the future.

k. I spent about 6 – 7 hours on the test with several breaks of 1 to 2 hours. I did not do very much different from Test 1 and 2.