Hunter Linker

MET 330

Test 2 Reflections

1) This test helped me demonstrate and work towards course objective "Identify and solve for different very specific industrial problems, such as, open-channel flow, cavitation, water hammer, drag, lift, forces in pipes, and learn about different instruments to measure fluid flow quantities (such as, pressure, fluid velocity, flow velocity, etc.)" Because we solved the lazy river question and had to demonstrate knowledge of all the concepts in the objective.
2) I believe I used the correct equations in the first few questions but may have not utilized them correctly in specifically the question about buoyancy. I also knew what needed to be done on the second question when we were asked to find the forces in the system but I forgot that the forces in the Y direction should just be equal to the W and there is no normal force
3)

1.	Purpose	0.5/10.0 out of 0.5/10.0
2.	Drawings	1.0/10.0 out of 1.0/10.0
3.	Sources	1.0/10.0 out of 1.0/10.0
4.	Design considerations	1.0/10.0 out of 1.0/10.0
5.	Data and variables	0.5/10.0 out of 0.5/10.0
6.	Procedure	2.0/10.0 out of 2.0/10.0
7.	Calculations	0.5/10.0 out of 2.0/10.0
8.	Summary	0.5/10.0 out of 0.5/10.0
9.	Materials	0.5/10.0 out of 0.5/10.0
10.	Analysis	1.0/10.0 out of 1.0/10.0
	TOTAL	**8.5/10.0** out of 10.0/10.0

1. Flow in the open channel
    a. Lazy river dimensions — 1/28 out of 1/28
    b. Correct equation — 1/28 out of 1/28
    c. Area and hydraulic radius — 1/28 out of 1/28
    d. Correct results? — 0/28 out of 1/28
2. Drag force on the child
    a. Correct equation to use — 1/28 out of 1/28
    b. Correct area and velocity — 1/28 out of 1/28
    c. How Cd was obtained? — 1/28 out of 1/28
    d. Correct results? — 0/28 out of 1/28
3. Lazy river tube floating – stability
    a. Realize Fb=W and solve for distance into water — 1/28 out of 1/28
    b. Compute metacenter location — 0/28 out of 1/28
    c. Realize metacenter will always be above cg — 1/28 out of 1/28
    d. Correct results? — 0/28 out of 1/28
4. Force on the channel walls and floor per 1m-length

a. Vertical force (weight) & location 0/28 out of 1/28
b. Horizontal force magnitude 1/28 out of 1/28
c. Horizontal force location 1/28 out of 1/28
d. Correct results? 0/28 out of 1/28

5. Pipe-elbow forces
   a. Free body diagram and correct forces 0/28 out of 1/28
   b. Force in x – solve for Rx 1/28 out of 1/28
   c. Force in y (weight) – solve for Ry 1/28 out of 1/28
   d. Correct results? 0/28 out of 1/28
6. Flow-nozzle flowmeter pressure drop
   a. Right equation and A1/A2 0/28 out of 1/28
   b. C value 1/28 out of 1/28
   c. Correct results? 0/28 out of 1/28
7. Water hammer pressure increase and cavitation
   a. Wave velocity (units?) 0/28 out of 1/28
   b. Pressure increase and Pmax 1/28 out of 1/28
   c. Pipe thickness 1/28 out of 1/28
   d. Lowest pressure & compare to sat pressure (cavit) 0/28 out of 1/28
   e. Correct results? 0/28 out of 1/28

8.5 + (80)*(15/28) = 51.35

4) A) I had a few issues computing

B) I first started off with the format for tests and began with the purpose and stating all given values. Then I went through question by question finding the values and using them in the following question.

C) I learned how to compute forces on open channels and how to design a system with proper flow rate.

D) Engineers use these concepts when designing drainage ditches and other flowing open channels where a specific flow rate is needed for some reason.

E) I will use these concepts in my workplace when we work with our hydraulic power system

F) Yes, I believe the concepts we have learned are important to my career because I can use the information taught to me to analyze if a pipe is thick enough to withstand the pressure, we designed of it.

G) I will use this information in the future at work when we upgrade our hydraulic motion base to help decide what size piping, we will need for the flow rate and pressures specified.

H) I will be able to apply these concepts we learned in the course at work when we upgrade our hydraulic motion base to help me add to the design and pipe selection.

I) The area I feel is most improved in this test is my use of the flow rate equation and Reynolds number equations

J) The course intersects my career field because I work with hydraulics and fluid mechanics in my day-to-day job.

K) I spent roughly 9 hours on this test. My time was organized however in the future I would like to spread out the workload into multiple days to give myself more time to thoughtfully think out how to solve the problem.