Test 1

MET330 Fluid Mechanics

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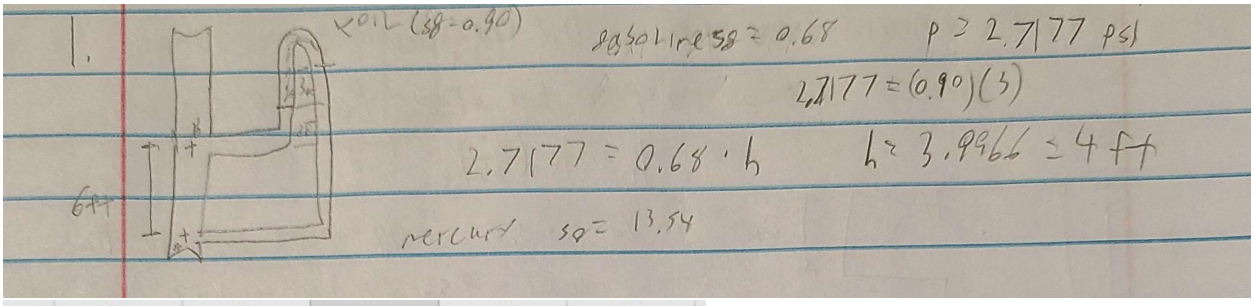
Question 1

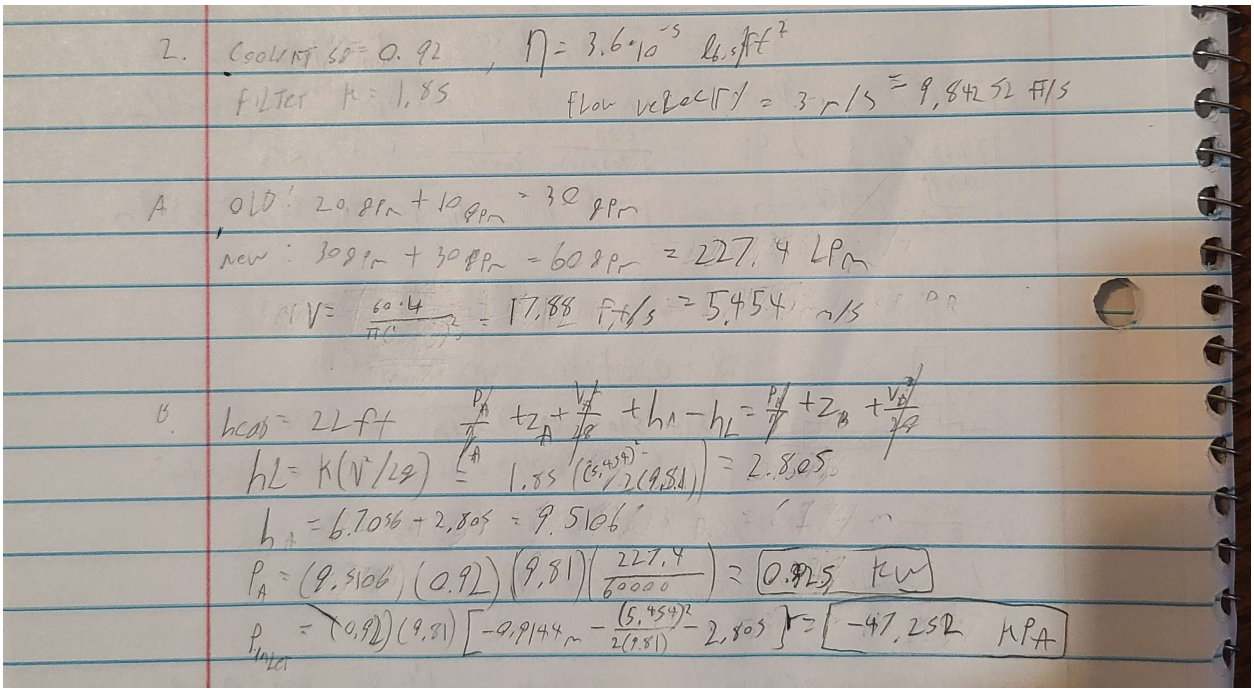


	1	2	3	4	5
1	0.68	2.7177	3.996618		
2	0.9	2.7177	3.019667		
3	13.54	2.7177	0.200716		
4					
5					

Analysis

The results make sense as the gasoline has a lower specific gravity than the oil and the water. The gasoline would need to be higher the manometer because it is trying to float on the water. This is also the reason the mercury can be lower than the oil and the gasoline, because it is heavier.

Question 2

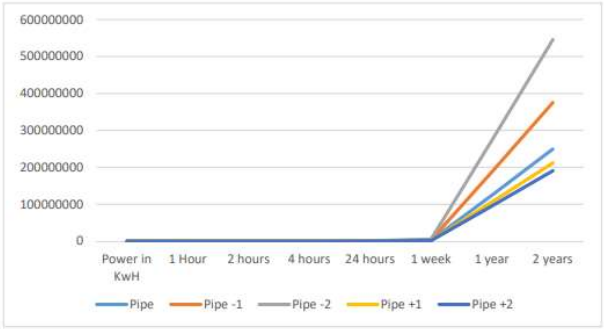


sq	0.92	$ per Kwh	730
filer (k)	1.85		
Flow (Q) (LPM)	227.4		
Flow (Q) (GPM)	60		
Head (ft)	22		

	Pipe	Pipe -1	pipe -2	Pipe +1	Pipe +2
size (in)	2.067	1.61	1.38	2.469	3.068
velocity (ft/s)	17.8896	29.48695	40.13501	12.53832	8.120278
velocity (m/s)	5.456328	8.99352	12.24118	3.824188	2.476685
energy loss	2.807202	7.62662	14.12925	1.378959	0.578381
Ha	9.517202	14.33662	20.83925	8.088959	7.288381
Power added	0.325541	0.490391	0.712817	0.276687	0.249303
Inlet Pressure	-47.2831	-114.291	-204.701	-27.4253	-16.2943
Cost (p. 6ft)	46.95	33.95	28.95	71.95	92.95
Total	46.95*x	33.95*x	28.95*x	71.95*x	92.95*x

Cost Breakdown	Pipe	Pipe -1	Pipe -2	Pipe +1	Pipe +2
Pump, labor,tansport	18.78	13.58	11.58	28.78	37.18
Extra fees	7.0425	5.0925	4.3425	10.7925	13.9425
Pipe cost	21.1275	15.2775	13.0275	32.3775	41.8275

Operation Costs	Pipe	Pipe -1	Pipe -2	Pipe +1	Pipe +2
Power in KwH	19.53244	29.42348	42.76904	16.60122	14.95817
1 Hour	14258.68	21479.14	31221.4	12118.89	10919.46
2 hours	28517.37	42958.28	62442.79	24237.78	21838.92
4 hours	57034.74	85916.57	124885.6	48475.55	43677.85
24 hours	342208.4	515499.4	749313.5	290853.3	262067.1
1 week	2395459	3608496	5245195	2035973	1834470
1 year	1.25E+08	1.88E+08	2.73E+08	1.06E+08	95392419
2 years	2.49E+08	3.75E+08	5.46E+08	2.12E+08	1.91E+08



Analysis

The results make sense to me, because a system pumping sixty gallons per minute is moving a lot of material very quickly. A pump working for two years without stop is going to draw a lot of power over those two years.