ABSTRACT.

The article describes an art project that describes fluid visualization, when trying to define pattern description in fluids the main point to focus on is visualization. This is because this aspect defines the observation as the fluids collide with other objects and other objectives. To be able to predict data that is depicted mechanically, it is crucial that we use models in scientific methods. Examples of mechanical data in flow of fluids include velocity and force, some of the examples of forces involve experience forces such as drag forces. To define drag forces it is important to understand other forces such as friction and pressure forces of drag. Therefore, drag forces are the compilation of pressure drags and friction, this involves cases where the forces move in a direction that is parallel to the direction of flow. One example is the lift, the forces aid in the evaluation of the desired quantity of the relationship between the Bernoulli principle in relation to the amount of lift force.

INTRODUCTION.

To understand this concept, we have to take a look at an example through a report of an experiment performed. It entails a report about an image taken using a CPU custom loop coolant inside a protein bludder with a camera type Powershot S×420 IS with an ISO of 1600. The image has been slightly edited using gimp to fix the aspects such as depth of field, sharpness and tone of the color. The aspects are key in showing fluid flow an important concept that will demonstrate Fluid visualization. In open vessels fluids passing leave behind the upper section exposed however velocity distribution is done straight. The observation is that the velocity appeared to reduce as the sides and the bases of the fluids are approached to, this is caused by forces of friction.

Velocity of the flow appears as maximum at the topmost point; the vertical centerline is caused by surface tension along resistance from the air. The free fluid surfaces reduce the velocity, vertical velocity is defined as the measurement of velocity along the vertical lines on the cross-section. The ratio of the inertial forces to the viscous forces is defined as the Reynold number, this applies to the any of the flow phenomena. Through this the prediction of whether the flow is turbulent or laminar, further on finding the coefficient of friction that determines the head accuracy and frictional loss.

The Reynold number can be applied various ways, by providing engineers with timely information about state flow. Through provision of engineers with timely information on the flow state, this helps in the solution of problems of problems at hand. Lamina flow shows the flow of the fluid in layers, this occurs when there is minimal velocity of the flow and predominant viscous forces, in this case the flow streamlines the velocity at the point which is constant in magnitude and direction, the turbulent forces are also in consideration. At some point there is maximum velocity which later means that the magnitude also varies through time. The issue of the layers, when a fluid passes a solid, its particles on the surface have the velocity of the surface due to the concept of viscosity of the fluid.

Objectives.

The main aim of this report is to conduct an experiment on the instability of interface between various fluids of different densities. This happens a lighter fluid is pressing on a fluid which is heavier thus making attempts to definition of phenomena in an extensive way.

Experiment and discussion.

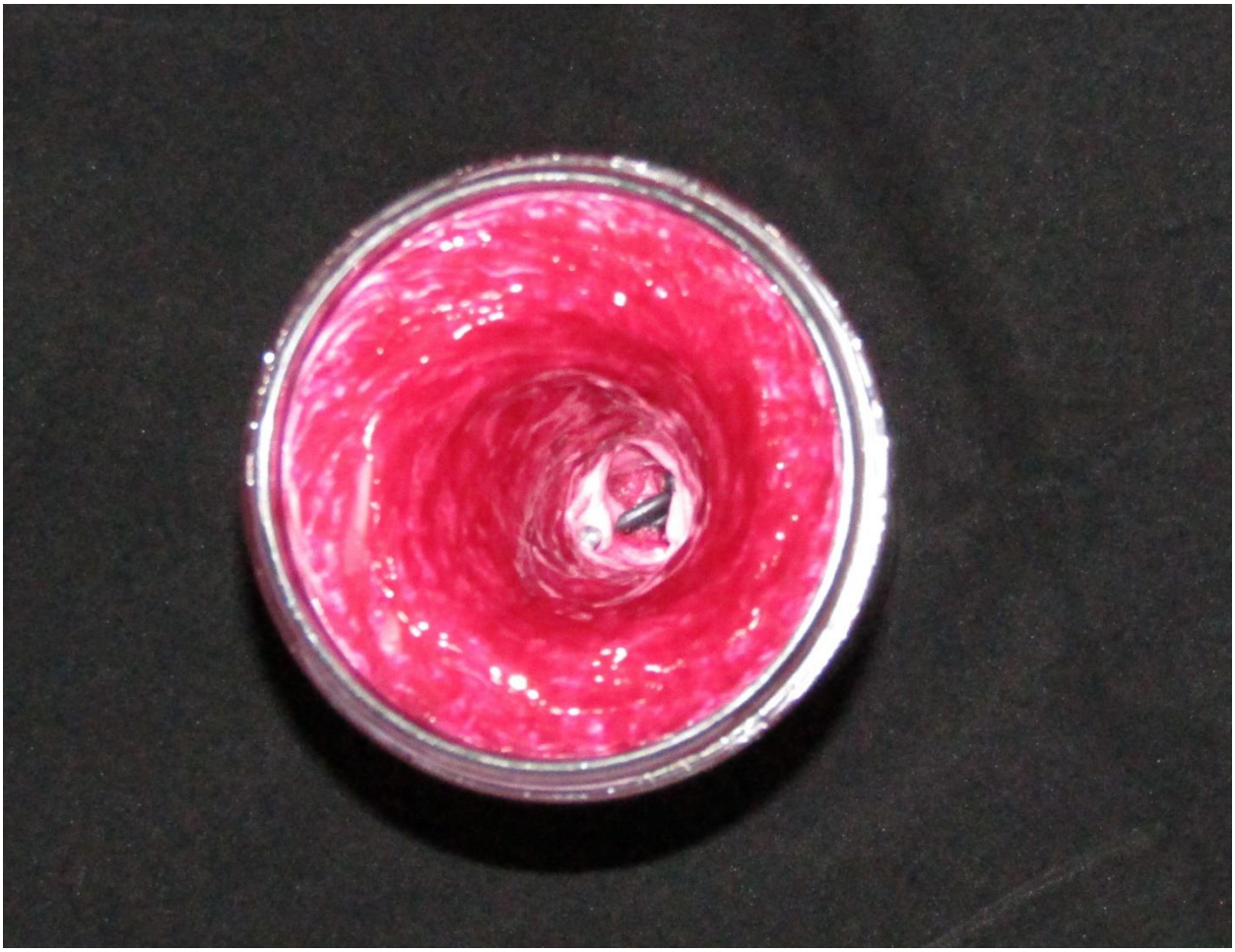
The report for the experiment details the conditions considered, the set room conditions were 25 degrees temperature. As the image shows the experiment was placed on top of a white tile, a clear visible beaker was used. By this the provision of a sight of the motion of the fluid motion. Black tea was put inside to a 50ml level, yellow yoghurt is later on added to the mixture slowly and steadily while taking note of the way that the two liquids behave. While accelerating constantly the yellow yoghurt moves to the bottom of the beaker. After reaching the bottom of the beaker it starts spreading at constant acceleration. The behavior can be scientifically described as being caused by Rayleigh-Taylor instability; this means that gravity causes poured fluids to settle to stability.

The image was taken at a frequency of 4 seconds, an assumption was made that viscosity of the fluid is similar to that of standard water. Black tea used is with a density of 1.2Mole/ml and the brown yoghurt has a density of 5moles/ml. The image was taken during the daytime, so as to have an aerial view. From the sideway perspective the camera was set at a distance of 2 meters from the table and 3m away from the beaker. The image was taken using a CPU custom loop coolant inside a protein bludder with a camera type Powershot S×420 IS with an ISO of 1600. It has been slightly edited using gimp to fix the aspects such as depth of field, sharpness and tone of the color.

Conclusion.

It is possible to observe the boundary layer, the flow of the fluid around the object, there exists a separation point, retarded boundary is caused due to the existing diverse pressure

gradient. There exists in the emerged body forces of both lift and drag, the upper part however is undisturbed because of gravity, this is considered as the Rayleigh-Taylor effect.

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