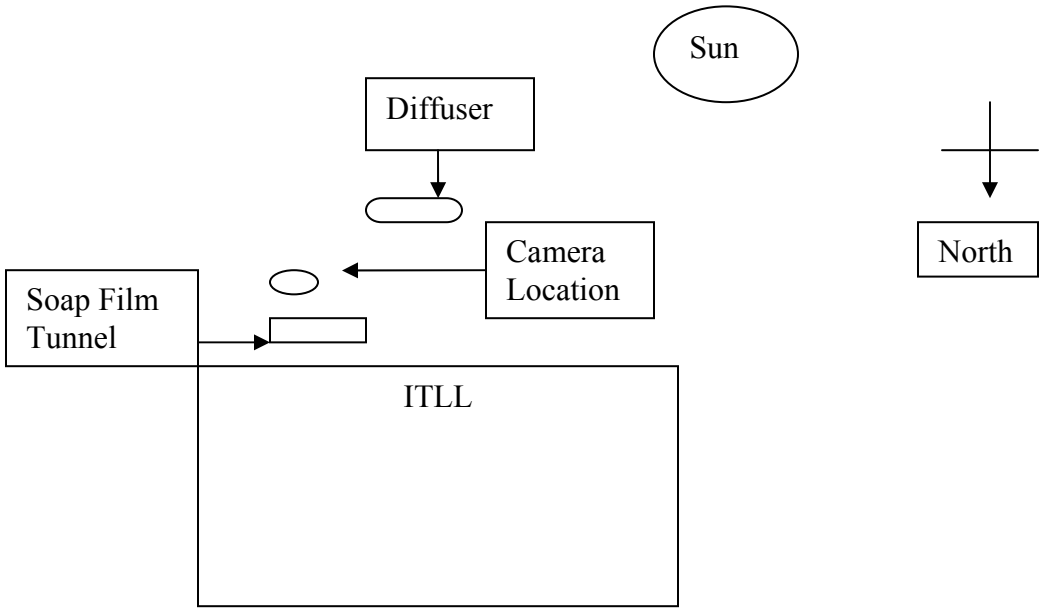
Katina Butler
Flow Visualization
Report 3
Due 10/20/04

Group photo 1: Soap Film Tunnel

This photograph is the first group project. The purpose of the project is to get students to work in teams to photograph any flow that would normally be difficult to do by oneself. The relevant photograph is one of the one jet soap tunnel.

The soap film tunnel was set up just south of the Integrated Teaching and Learning Lab. I used Kerstin's Nikon N80 SLR while Kerstin and Chris created the soap film bubble. Adrien was standing behind and to the left of me holding up the light diffuser (please refer to the diagram). The picture is taken at an approximate angle of 45 degrees to the soap film.



The visualization technique used to obtain the picture was the one jet-soap film tunnel. Diffused natural light from the southwest at approximately 2:00 pm on October 12, 2004 was used as the light source. There was no use of any flash or other form of artificial light. The soap film is approximately half an ounce of Dawn dish soap, and 64 ounces of tap water. This photograph has been touched up in Adobe Photoshop 7.0. The

actual print was scanned at 300 dpi using the Hewlett-Packard scanner on the top floor of the ITLL.

The field of view of the altered photograph is about five inches from top to bottom and about three inches from side to side. The area in the photograph is the top quarter of the available soap film bubble. The rest of the soap film remained clear no matter where the diffuser was located and the colors were only visible at extreme angles that would cause shadows in the photograph. The distance from the end of the lens to the soap film is about one foot. The lens focal length is 105mm on an 80-105mm 4.0:5.6 aperture lens. The picture was taken with a Nikon N80 film Single Lens Reflex camera. The aperture was 9.5 and the shutter speed was 1/1000 of a second. The film used was Fujicolor Superia X-tra ISO400 film. Film was developed at Happy Hour Photo.

The image approximates how flow moves in a two-dimensional field within a boundary (the fishing lines of the apparatus). I like how the colors change and mutate from the top to the bottom. The aspect that I would like to improve is the "mirroring" effect of the fishing line on the top left side—it is assumed that this occurred because the photograph is taken at an oblique angle to obtain better colors: Another possibility is that the soap jet flowed along the left side. Also, for some reason, when the picture was scanned, the colors became muted—from a quick experiment, the actual photo looks exactly like the scanned picture as long as the photo is set on a lighted background. This is odd because the scanner was not backlit.