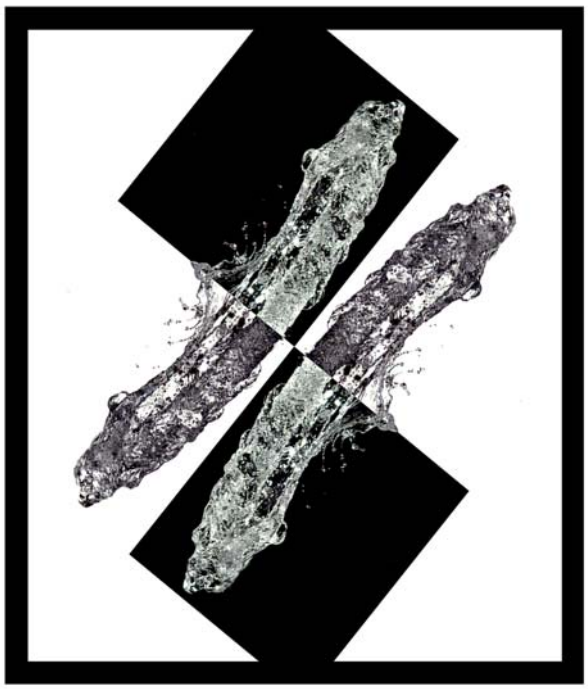
Group Project #3
"Water Jet"



Team Members

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Flow Visualization
MCEN 4228/5228
May 3, 2006

Mike Demmons – Photographer *University of Colorado – Boulder*
Andrea Fabri – Author *May 3, 2006*

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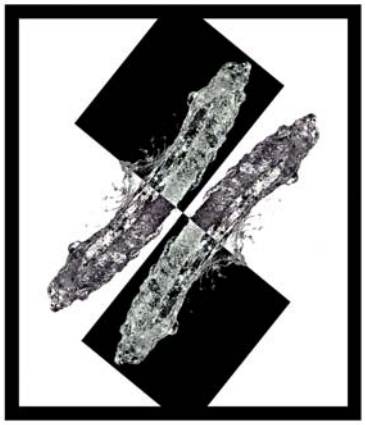
Image 1: Original Unedited Image

Image 2: Final Edited Image



BACKGROUND INFORMATION:

For the 3rd and last group project we decided to create a water jet. Low pressure water jets were first used for mining gold in California in 1852. Since then water jets have been used for cleaning, and recently, high powered steam water jets have been used for cutting metal[1]. A water jet can be a number of things, however, for this project; it is simply a jet of water under pressure[2].

[1] How Stuff Works, Inc. (2006), What are Water Jets used for?
http://science.howstuffworks.com/question553.htm
[2] Water Jet (2006). Wikapedia; the Online Encyclopedia.
http://en.wikepedia.org/wiki/Water_Jet

The purpose of this project was to create an original idea that is both intriguing and alluring, not only scientifically, but also visually. The original photograph shows the output of the jet. For the final image, the original photograph was mirrored three times and the background color has been altered to alternate between black and white. The final image is original and the content interesting and visually appealing.

PHOTOGRAPHIC TECHNIQUE:

IMAGE SUMMARY:

- Field of View: ~ 4" x 4"
- Image Size: 2592 x 1944 Pixels (72 x 72 dpi)
- Distance from Object to Lens: ~ 24"
- Lens Focal Length: 20 mm
- Type of Camera: Digital – Sony DSC-T1
- Exposure Specifications
    - Shutter Speed: 1/250 sec.
    - Aperture (f-stop): F/7.1
    - Image Resolution: 5 MP
- Film Type & Speed: ISO-250
- Digital Manipulation: Contrast, Focus & Sharpness Enhancement / Negative Applied
- Printing: None
- Lighting: Mixture of fluorescent overhead lighting & on camera flash

APPARATUS SET-UP:

A garden hose was connected to washing machine water supply and ran to bathroom tub. A simple holding apparatus was set-up to direct nozzle of garden hose in an upward position. A black felt background was placed behind subject. Camera was positioned on tripod and located ~24" from subject. Water supply was turned "on" with a flow rate of ~1 gal/min. Multiple exposures were taken with on-camera flash firing during each exposure. A simplified schematic of apparatus set-up is noted by ***Figure 1***.

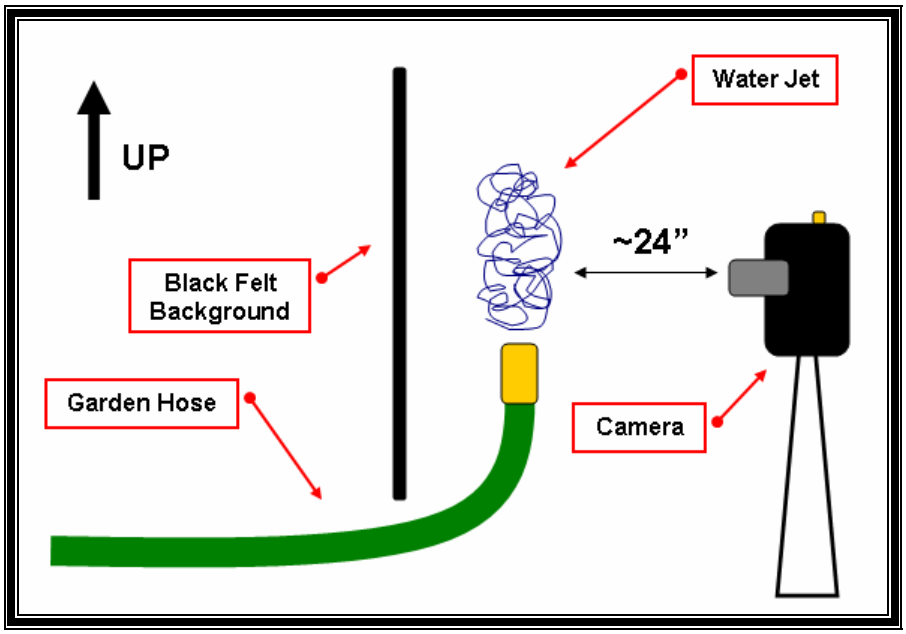


FIGURE 1: Apparatus Set-up Schematic

IN SUMMARY:

This image is both interesting scientifically and visually. If done over, I would propose using different amounts of water; less than 1 gal/min and more than 1 gal/min. I would do this to determine if any differences were made in the height or density of the jet, depending on the amount of water used. However, this is just my opinion and may not be seem important to the viewer.

This procedure was essentially very simple, yet yielded an incredible visualization of flow phenomena. The physics of \ water being pressurized and channeled through a very narrow nozzle from its source was demonstrated effectively. I think the image is very successful and feel that our intent was realized.