Name(s)

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Project Number

J0102

Project Title

How Bernoulli's Equation and Cavitation Predict the Maximum Arc Height of a Siphoned Flow of Water

Abstract

Objectives/Goals
The objective of this study was to determine the maximum arc height of water in a siphon flow.

Methods/Materials
Set up a siphon system using a ladder, buckets, plastic tubing, rope, carabiner, and colored water to try to determine maximum arc height of water in a siphon flow. Raised the arc of the tubing five inches for each trial run. Used Bernoulli's equation to analyze the flow and prove that the math predicts outcome of the experiment.

Results
The siphon flow still functioned with an arc of 7 1/2 feet high. I reached the maximum height to safely measure arc height with my equipment.

Conclusions/Discussion
The arc of the siphon in my experiment reached a height of 7 1/2 feet and I was unable to safely raise the arc any higher. Further research revealed that a siphon with water tends to break at an arc height of 33 feet because cavitation interrupts the flow of the fluid. Modern industry uses the principles of fluid dynamics in many applications.

Summary Statement

I used Bernoulli's equation and cavitation principles to explain results of experiment using water in a siphon flow.

Help Received

I researched and set up the experiment on my own. My father explained the basics of Bernoulli's equation to me and I researched it further on my own.