



Turbo Draft Flow Tests

Calera, Alabama
August 14, 2011

Overview

- On August 13th and 14th, 2011, GBW Associates, LLC conducted a Rural Water Supply Operations Seminar hosted by the Shelby County (Alabama) Fire and EMS Association and the Calera Fire Department.
- Part of the seminar included a review of drafting operations and the use of a Turbo Draft device to access water that a pumper may not be able to access.
- Some folks in attendance at the seminar wanted to know the flow capability of the Turbo Draft and since a local vendor had supplied a demo unit, the stage was set to conduct a couple of tests.

The Process

- Two flow tests were conducted. Both flow tests had the Turbo Draft supply the source pumper and the source pumper then fed a portable master stream device.
- The only difference between the two flow tests was the source pumper.



Test Pumper #1



Brierfield Engine 203 – a 1,500 gpm pumper w/500 gallon tank was used as the source pumper in the first flow test.

Flow Test #1 : The Set-Up



The Turbo Draft was placed on a roof ladder to aid in deployment. The device was fed by 100-feet of 3-inch hose and the device returned water to the pumper through 100-feet of 5-inch hose.

Flow Test #1 : The Set-Up



Not fully deployed yet in this photo.

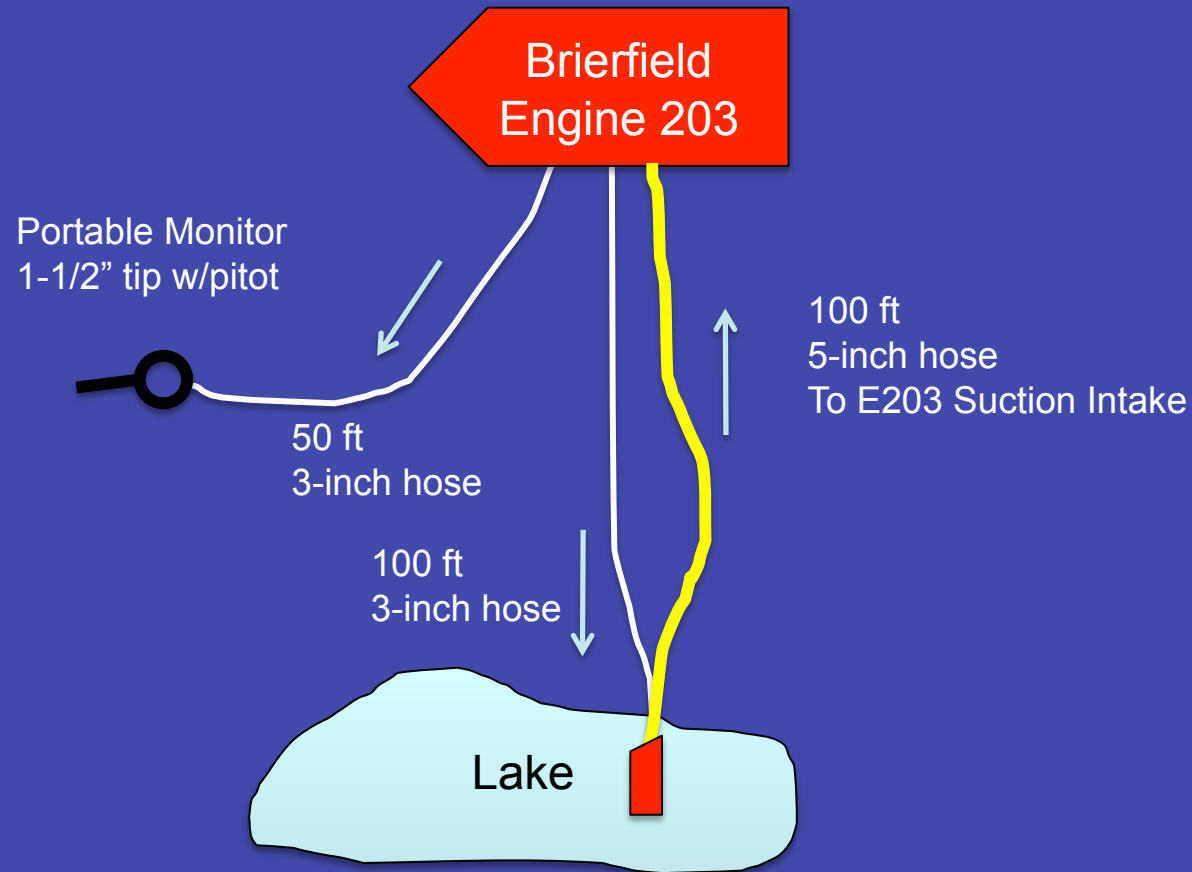
The Turbo Draft was submersed in about 2-feet of water and rested on a roof ladder because of the lake's silted bottom.

Flow Test #1 : The Set-Up



Flow measurement for both tests used a fixed pitot attached to a portable master stream device. The pitot was equipped with a 1-1/2-inch tip and the master stream device was fed by 3-inch hose from the source pumper.

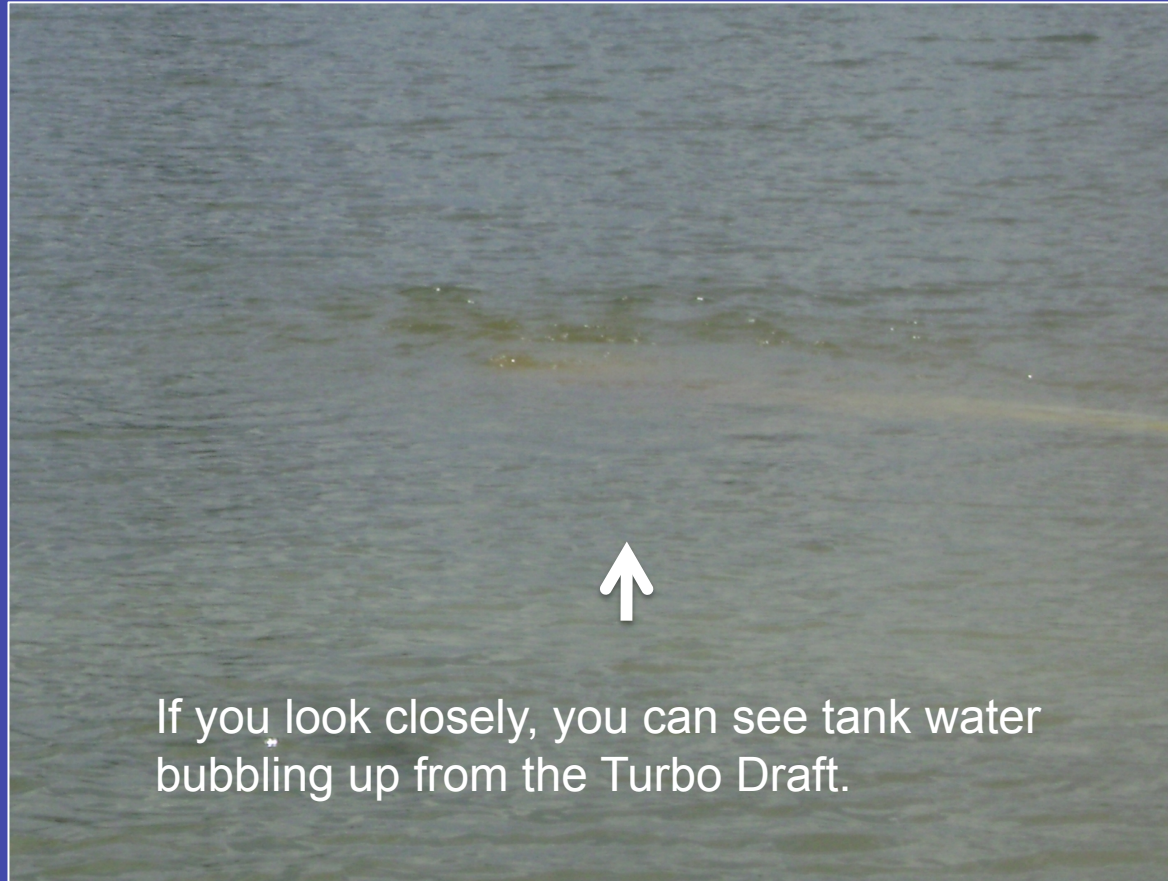
Flow Test #1 : The Set-Up



Flow Test #1 : The Results

- This flow test produced a sometimes common result – the pumper exhausted its tank water while attempting to get a flow from the Turbo Draft and the end result was no flow and a pumper with no water.

Flow Test #1 : The Results



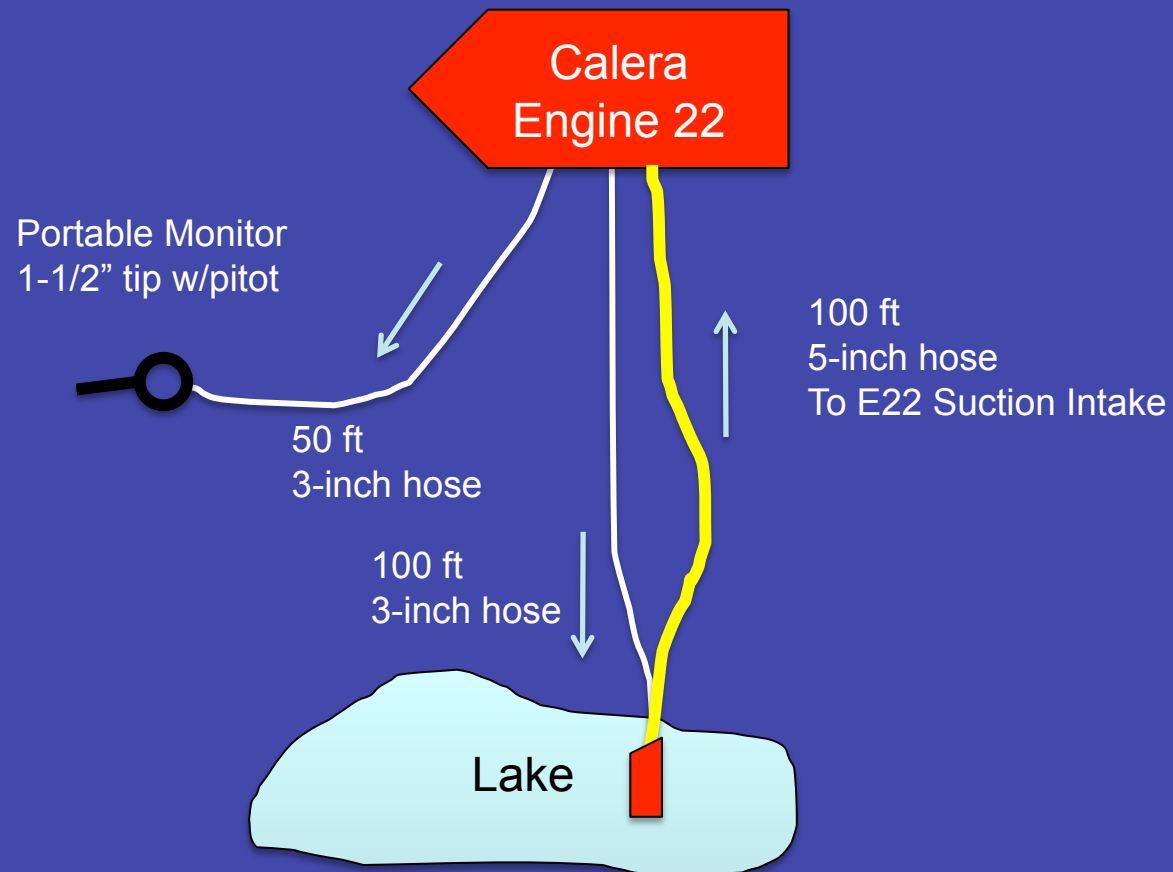
If you look closely, you can see tank water bubbling up from the Turbo Draft.

Test Pumper #2



Calera Engine 22 – a 1,500 gpm pumper w/1,000-gallon tank – was used as the source pumper for Flow Test #2.

Flow Test #2 : The Set-Up



Flow Test #2 : The Results



90 psi on 1-1/2-inch tip

620 gpm



Flow Test #2 : The Results



Flow Test #2 – The Results

- With a pump discharge pressure of 170 psi to the Turbo Draft, a pitot reading of 90 psi was obtained at the portable monitor – which meant a flow of 620 gpm.
- This flow test provided a good example of a use for the Turbo Draft device – although the 170 psi discharge pressure to the device might be tricky to maintain when pumping other lines.
- It is also important to note that this approximate 620 gpm flow was really not the total flow of the pumper – since some water was being used to run the Turbo Draft. Therefore, the 620 gpm is the excess flow that was made available.
- While used in this arrangement, the device does not meet our 1,000 gpm tanker fill rate goal – it does prove to be a another good tool “in the tool box.”

Summary

- Both Test #1 and #2 showed real applications of the device and its flow capabilities using 100 feet of 3-inch and 100 feet of 5-inch hose.
- It was also apparent that while Turbo Draft is a simple device – operators must be well-versed and trained in its operation, otherwise, tank water can be lost - resulting in difficulty drafting.



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