Tanker Off-Load Tests

DeKalb County Alabama

September 20, 2009

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Overview

- On September 19th and 20th, 2009, GBW Associates, LLC conducted a Rural Water Supply Operations Seminar hosted by the DeKalb County Association of Fire Departments in DeKalb County, Alabama.
- Part of the seminar included a 2-hr tanker shuttle operation. After the shuttle was over, several tankers were evaluated for their off-loading performance.
- In order to evaluate offloading ability, the tankers participated in a weight test.
- The results of the weight tests are presented here.

The Participants

Aroney E3 – 3,000 gallons

Henagar T2 – 2,000 gallons

Cartersville T1 – 2,500 gallons

Fyffe E4 – 1,800 gallons

The Participants

Sylvania T1 – 3,500 gallons

The Process

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Each tanker was weighed with a driver and a full tank of water.

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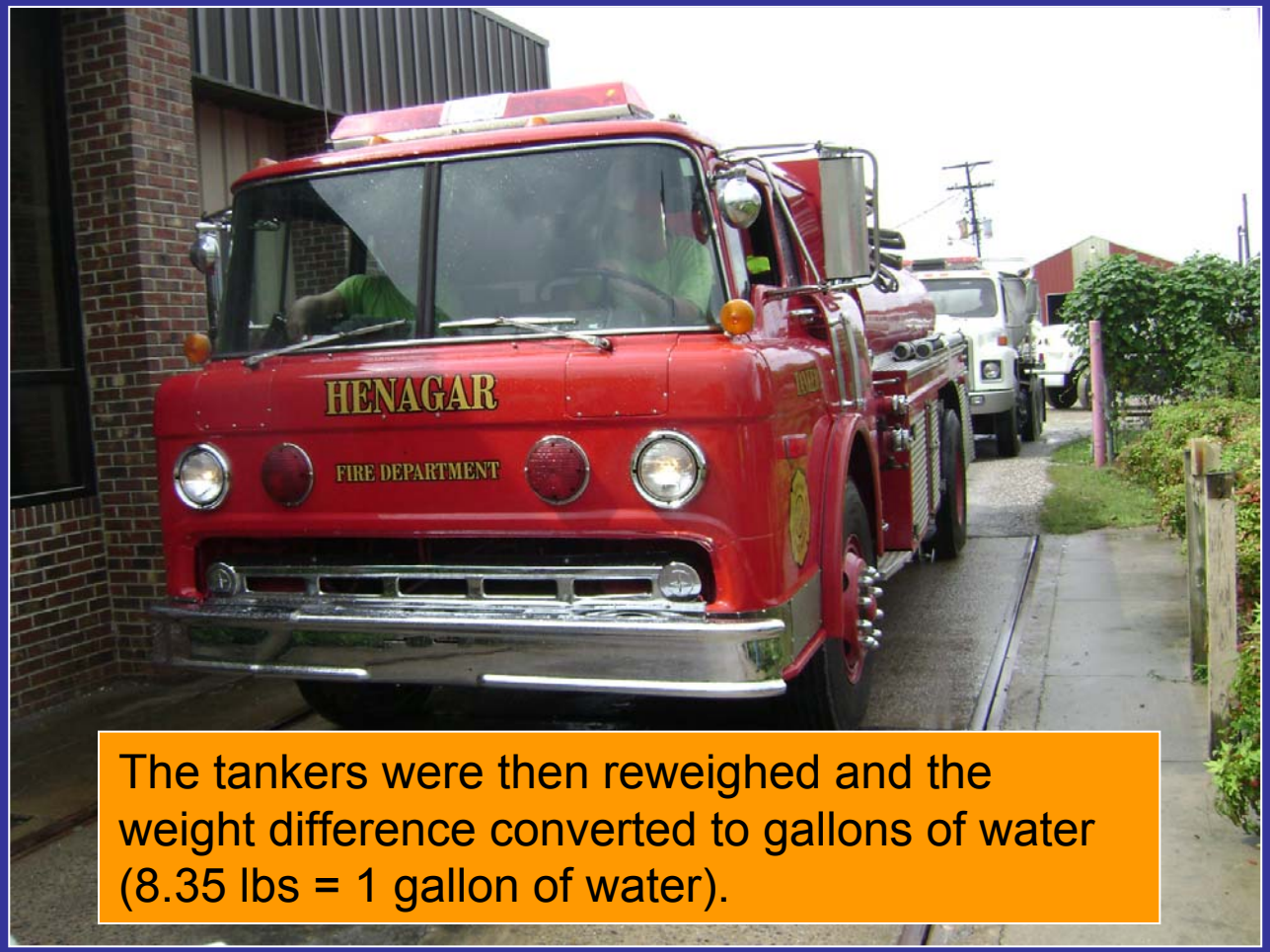
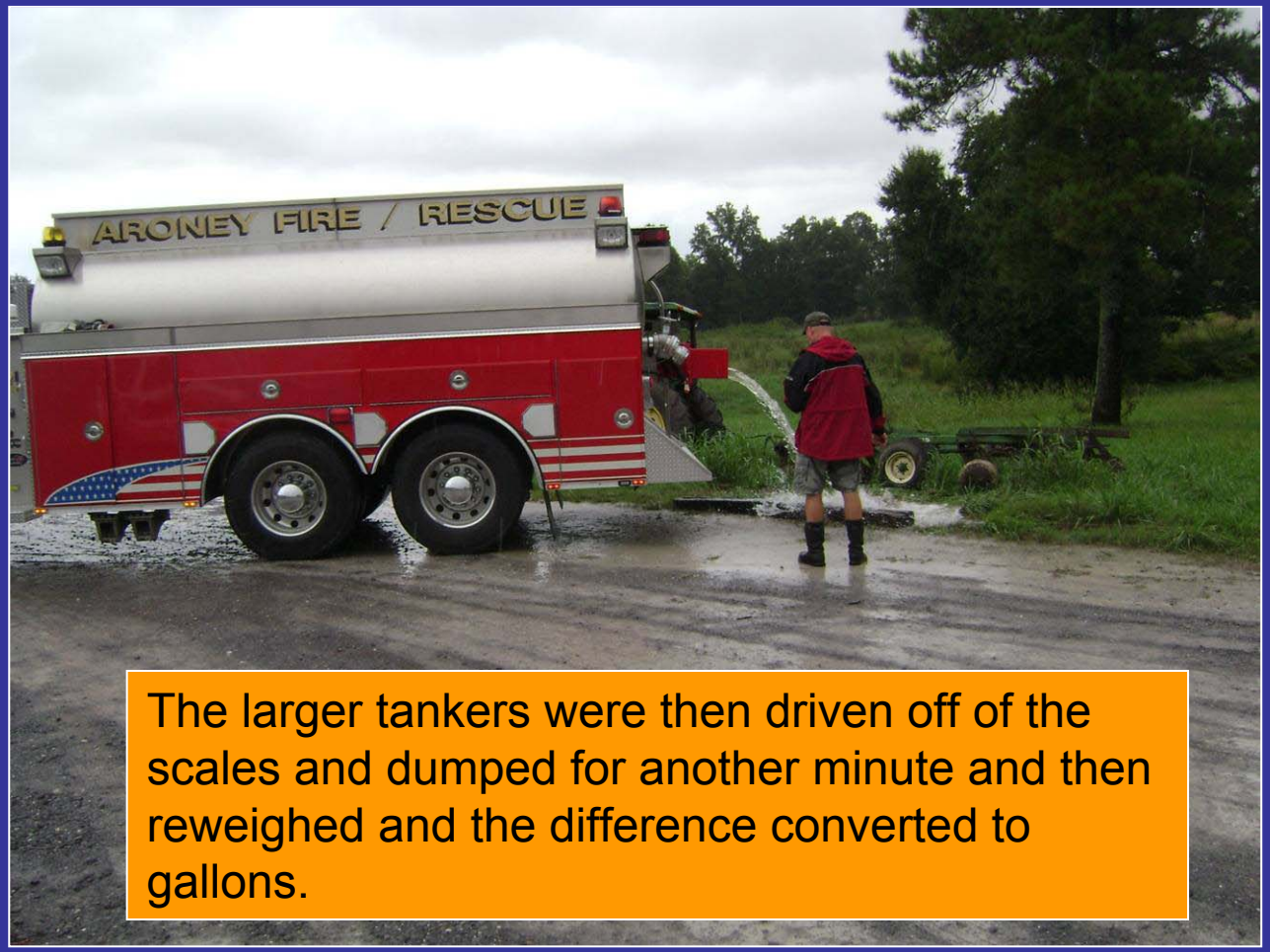


The tankers were then reweighed and the weight difference converted to gallons of water (8.35 lbs = 1 gallon of water).

The Process



The larger tankers were then driven off of the scales and dumped for another minute and then reweighed and the difference converted to gallons.

The Results: Aroney Engine 3

Aroney E3 – 3,000 gallons

- Aroney Engine 3 weighed 48,360 lbs when full.
- After dumping for 1 minute, it weighed 31,240 lbs which equates to about 2,050 gallons offloading in the first minute.
- The second minute offload rate was 565 gallons.
- Therefore, when operating in a tanker shuttle, this tanker should only offload for about 90 seconds and then head for more water: the contributing flow rate will be much higher than waiting for those last gallons to come out.

The Results: Henagar Tanker 2

Henagar T2 – 2,000 gallons

- Henagar Tanker 2 weighed 36,320 lbs when full.
- After dumping for 1 minute, it weighed 24,800 lbs which equates to about 1,380 gallons offloading in the first minute.
- The second minute offload rate was 240 gallons.
- Therefore, when operating in a tanker shuttle, this tanker should only offload for about 60 seconds and then head for more water: the contributing flow rate will be much higher than waiting for those last gallons to come out.

The Results: Cartersville Tanker 1

Cartersville T1 – 2,500 gallons

- Cartersville Tanker 1 weighed 38,340 lbs when full.
- After dumping for 1 minute, it weighed 28,460 lbs which equates to about 1,180 gallons offloading in the first minute.
- The second minute offload rate was 644 gallons.
- Therefore, when operating in a tanker shuttle, this tanker should only offload for about 2 minutes and then head for more water: the contributing flow rate will be much higher than waiting for those last gallons to come out.

The Results: Fyffe Engine 4

Fyffe E4 – 1,800 gallons

- Fyffe Engine 4 weighed 41,560 lbs when full.
- After dumping for 1 minute, it weighed 27,980 lbs which equates to about 1,630 gallons offloading in the first minute.
- The second minute offload rate was 100 gallons.
- Therefore, when operating in a tanker shuttle, this tanker should only offload for about 60 seconds and then head for more water: the contributing flow rate will be much higher than waiting for those last gallons to come out.

The Results: Sylvania Tanker 1

Sylvania T1 – 3,500 gallons

- Sylvania Tanker 1 weighed 47,480 lbs when full.
- After dumping for 1 minute, it weighed 27,580 lbs which equates to about 2,380 gallons offloading in the first minute.
- The second minute offload rate was 580 gallons.
- Therefore, when operating in a tanker shuttle, this tanker should only offload for about 90 seconds and then head for more water: the contributing flow rate will be much higher than waiting for those last gallons to come out.

Summary

- Tanker offload tests are important in determining how long a tanker should dump before heading to get more water – this is known as the Critical Dump Time.
- By conducting a weight test, a much more accurate measurement can be obtained and a much better understanding of how a tanker dumps can be obtained.

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