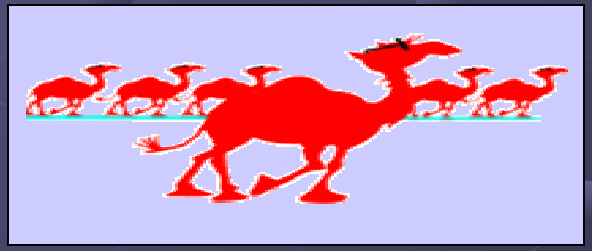
11th Annual South Carroll Water Supply Shuttle

2-hr Tanker Shuttle Exercise
September 16, 2007
Summary Report



Overview

On September 16, 2007, the Winfield Community VFD of Winfield, Maryland, hosted the 11th Annual South Carroll Water Supply Shuttle in cooperation with the Maryland State Fireman's Association's Rural Water Supply Committee. This presentation is a summary of the shuttle results.

The Purpose

Over the years, the purpose of the annual water supply drill has been to practice the delivery of “fire fighting” water - on a grand basis - using various delivery methods when possible.

History of the Annual Drill

- The history of the annual drill began in 1996 when the Winfield Community VFD held a water supply exercise to see how well they could sustain a fire flow in their non-hydranted response areas.
- The first drill stirred enough interest and desire to have a another drill the next year – and thus, the annual event was born.

History of the Annual Drill

- Of course, each year, the drill has grown in attendance and popularity.
- In the eleven years of moving water, there have been numerous participants from many different jurisdictions in the Mid-Atlantic Region.
- With each drill, new ideas were tried and many people got a chance to see first-hand, the complexities associated with delivering water in non-hydranted areas.

The 2007 Drill

- The 2007 water supply drill was held in the southern part of Carroll County near the Howard County line.
- The site was an industrial park that had a variety of different occupancies and structures - but no municipal water system.

The 2007 Drill

- As always, the drill replicated the 2-hour Fire Flow Test used by ISO in their evaluation of fire department water supply capabilities.

The ISO 2-hour Flow Test

- The ISO 2-hour flow test is a reasonable standard by which fire departments can compare their water supply operations.

The ISO 2-hour Flow Test

- There are three critical time segments of the ISO 2-hour Test:
  - 0:00 to 5:00 minutes
  - 5:01 to 15:00 minutes
  - 15:01 to 120:00 minutes

The Drill: 0:00 to 5:00 Minutes

- A drill site is selected and the units due to respond on the first-alarm assignment for that location are dispatched.
- Time starts when the first engine arrives on the scene and comes to a complete stop.
- There is no requirement to flow water during the first 5 minutes, but the crew must be prepared to flow water when the 5-minute mark is reached.

The Drill: 5:01 to 15:00 Minutes

- At the 5-minute mark, a flow of at least 250 gpm must begin and be sustained.
- During the next 10-minutes, crews can work to further develop their water supply and increase their flow, however…
- At the 15-minute mark, whatever the flow rate is at that time, that rate must be maintained for the remainder of the 2-hour test.

The Drill: 15:01 to 120:00 Minutes

- Once the 15-minute mark has been reached, the remainder of the 2-hour test is really just about sustaining the flow.
- Most of these ISO drills include the simulation of mutual aid response and allow additional water supply units to arrive and assist in the delivery process as they would on a real incident.

The Participants

The participants for the 11th Annual South Carroll Water Supply Shuttle were from three counties and two states and were representative of the type of water supply support that would respond to a fire in the chosen response area.

Participating in the drill were:

- Winfield Engine 142
  - 1500 gpm pumper w/1000 gal tank
- Winfield Tanker 14
  - 3500 gallon tanker w/1500 gpm pump

The Participants

- New Windsor E101
  - 2000 gpm pump w/ 1000 gallon tank
- New Windsor Brush 105
  - 1000 gpm pump w/ 200 gallon tank
- Mt Airy Engine Tanker 14
  - 1500 gpm pump w/ 2000 gallon tank
- Sykesville Engine Tanker 124
  - 2000 gpm pump w/ 1500 gallon tank
- Pleasant Valley Engine 63
  - 1500 gpm pump w/ 1000 gallon tank

The Participants

- Pleasant Valley Special Unit 6
  - 1500 gpm pump w/ 500 gallon tank
- Laytonsville Engine Tanker 17
  - 1750 gpm pump w/ 2000 gallon tank
- Laytonsville Engine 172
  - 750 gpm pump w/ 500 gallon tank
- Hyattstown Rescue Engine 709
  - 1500 gpm pump w/ 1500 gallon tank

The Participants

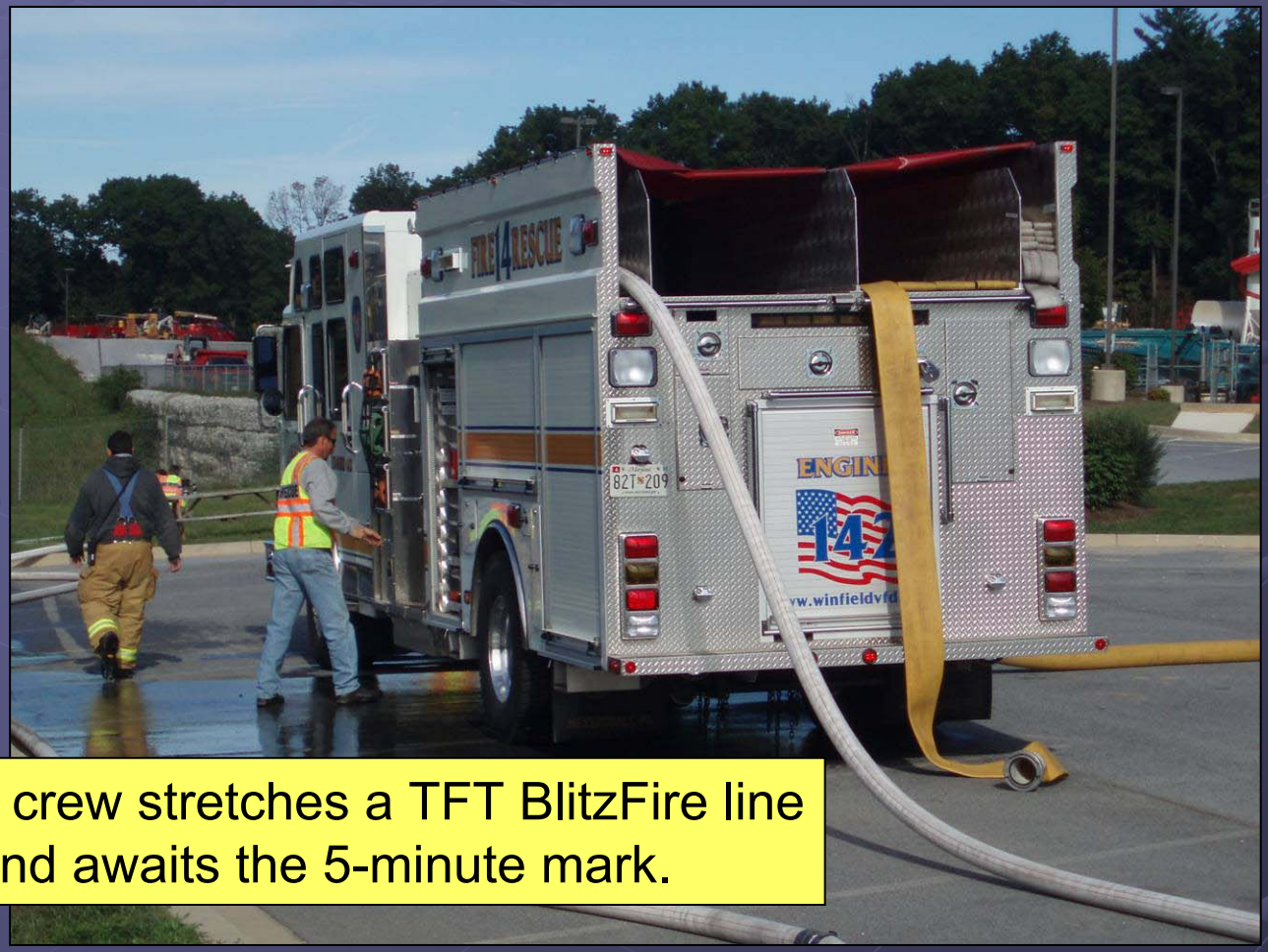
- Cabin John Engine 301
  - 1250 gpm pump w/ 1000 gallon tank
- New Market Engine Tanker 254
  - 1500 gpm pump w/ 1500 gallon tank
- New Midway Engine Tanker 94
  - 1500 gpm pump w/ 1500 gallon tank
- Independent Hose Co Tanker 1
  - 3000 gallon tank w/ 1000 gpm pump

The Participants

- New Market Engine Tanker 154
  - 1500 gpm pump w/ 2000 gallon tank
- Lucketts Tanker 610
  - 3000 gallon tank w/ 1500 gpm pump
- Silver Spring Engine 161
  - 1250 gpm pump w/ 750 gallon tank

The Drill Begins

E142 Sets Up to Flow

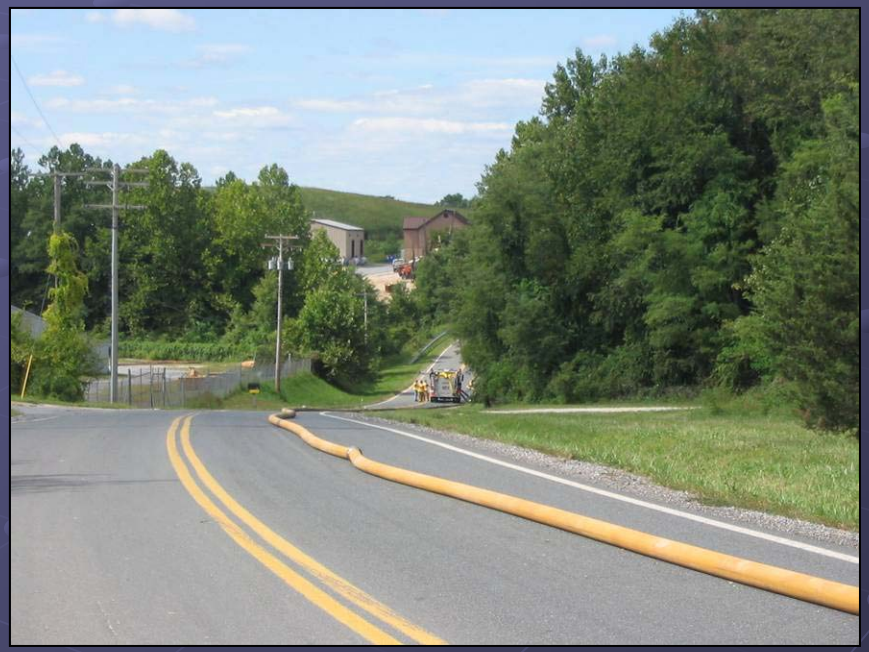


E142's crew stretches a TFT BlitzFire line and awaits the 5-minute mark.

A 250 gpm Flow is Started

At the 5-minute mark, water flow is started at a rate of 250 gpm. Meanwhile, other crews begin to arrive and set-up to provide the water supply needed to support the operation.

Relay Pumper



For the purpose of the drill, a relay pumper
is placed in the hose layout at around the 1000 ft mark.

E101 Serves as the Relay Pumper

New Windsor's E101, a 2000 gpm pumper, is used as the relay pumper – providing plenty of pumping capacity if needed.

While 500 gpm certainly could be pushed through 2300-ft of 5-inch hose without the need for a relay pumper, the use of the relay pumper allows for the flow to be expanded if needed – a critical point to remember for all water supply operations.

RE709 Gets the Dump Site Up and Running

Crews from Rescue Engine 709 and Tanker 610 work quickly to set up the dump site.

More Dump Tanks

As additional units arrive, they are stripped of their dump tanks in preparation for expanding the operation.

Pumping the Siamese

Meanwhile, tankers are pumping off water into a clappered siamese so that water can be sent to the relay pumper until the drafting operation is up and running.

Pumping the Siamese

The drafting engine has trouble maintaining a prime so Tanker 1 pumps off its water to the siamese in order to keep water flowing..

Large Diameter Hose

The use of LDH is important in this operation because it minimizes the amount of work that the pumps have to do to move the water 2300 ft.

Flow is Increased

At the 15-minute mark, the flow is moved to 750 gpm using a Blitzfire and a deck gun.

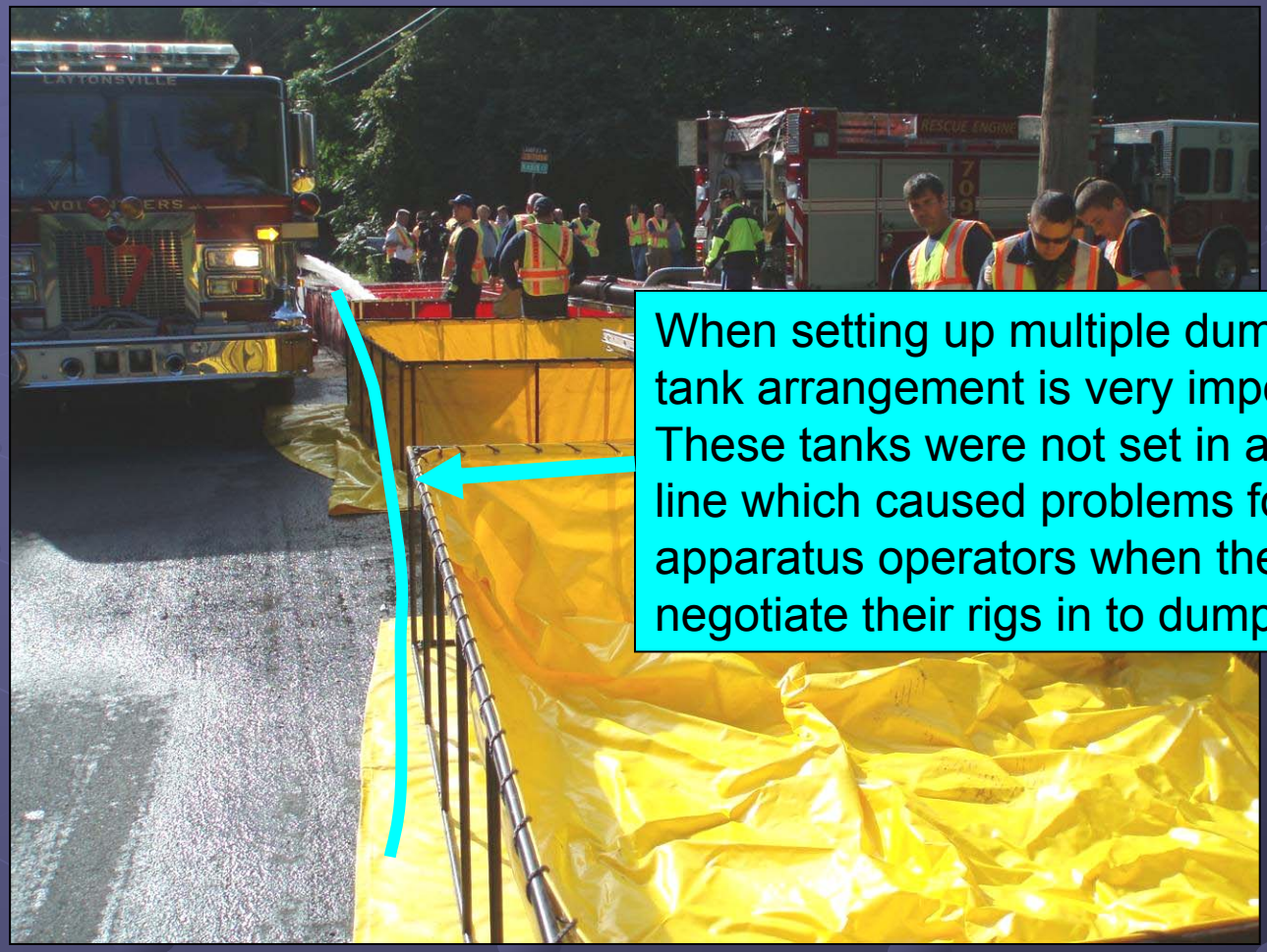
Jet Siphons

Several jet siphons are used to transfer water between dump tanks by using 6-inch suction hose as the transfer conduits.

Jet Siphons

A straight ladder is used to bridge two tanks so that the tanks can be spaced farther apart and the suction hose can be supported.

Tank Arrangement



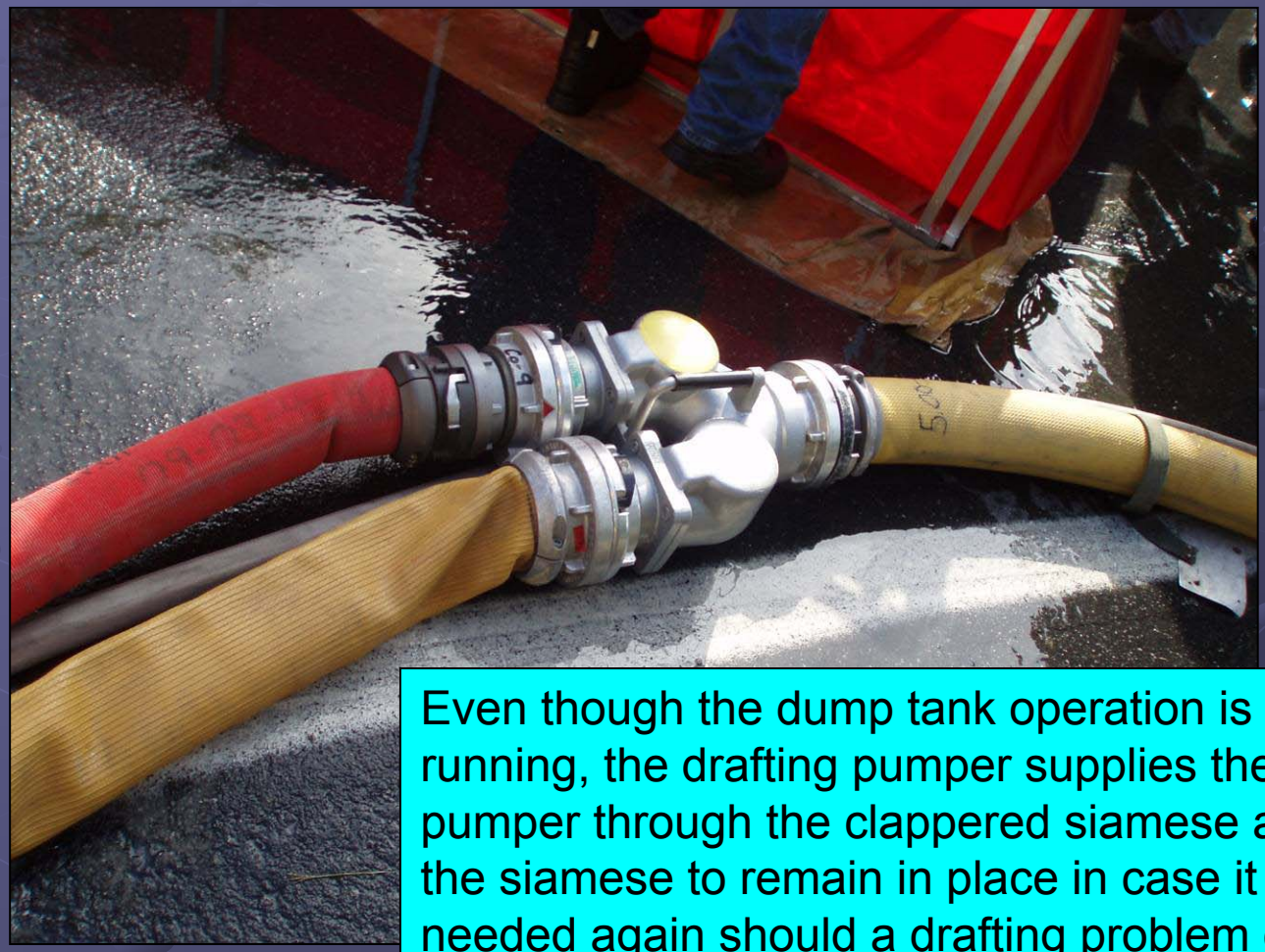
Gaining Space

Caution: Spanning dump tanks by using ladders requires additional suction hose …so one must think ahead in the planning process.

Gaining Space

Here, two, 10-ft sections of 6-inch suction hose are used to build a single transfer siphon.

Supporting the Siamese



Even though the dump tank operation is up and running, the drafting pumper supplies the relay pumper through the clappered siamese allowing the siamese to remain in place in case it is needed again should a drafting problem occur.

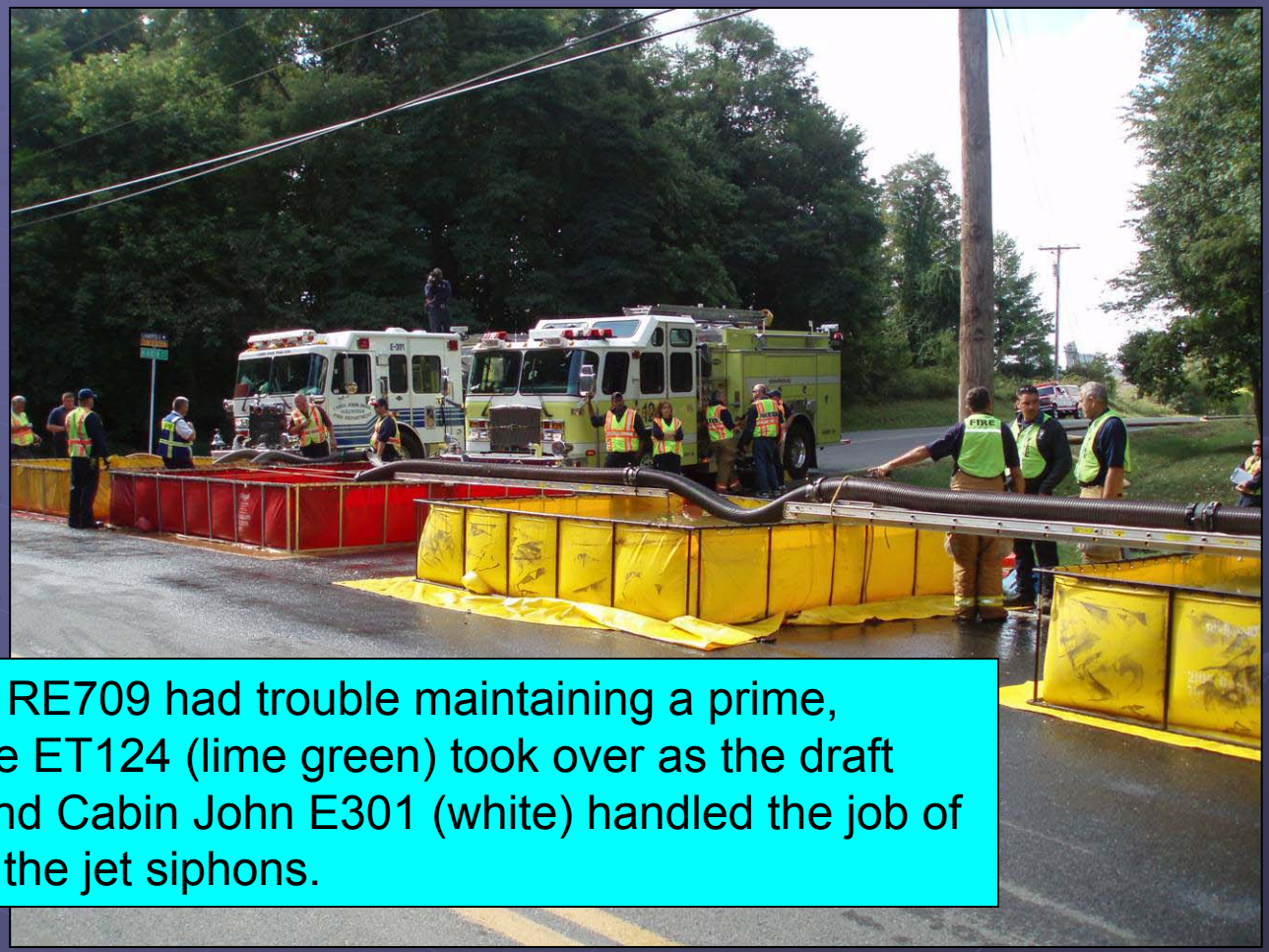
Four Drop Tanks

Eventually, the dump site is built out to a total of four dump tanks.

Maintaining Flow

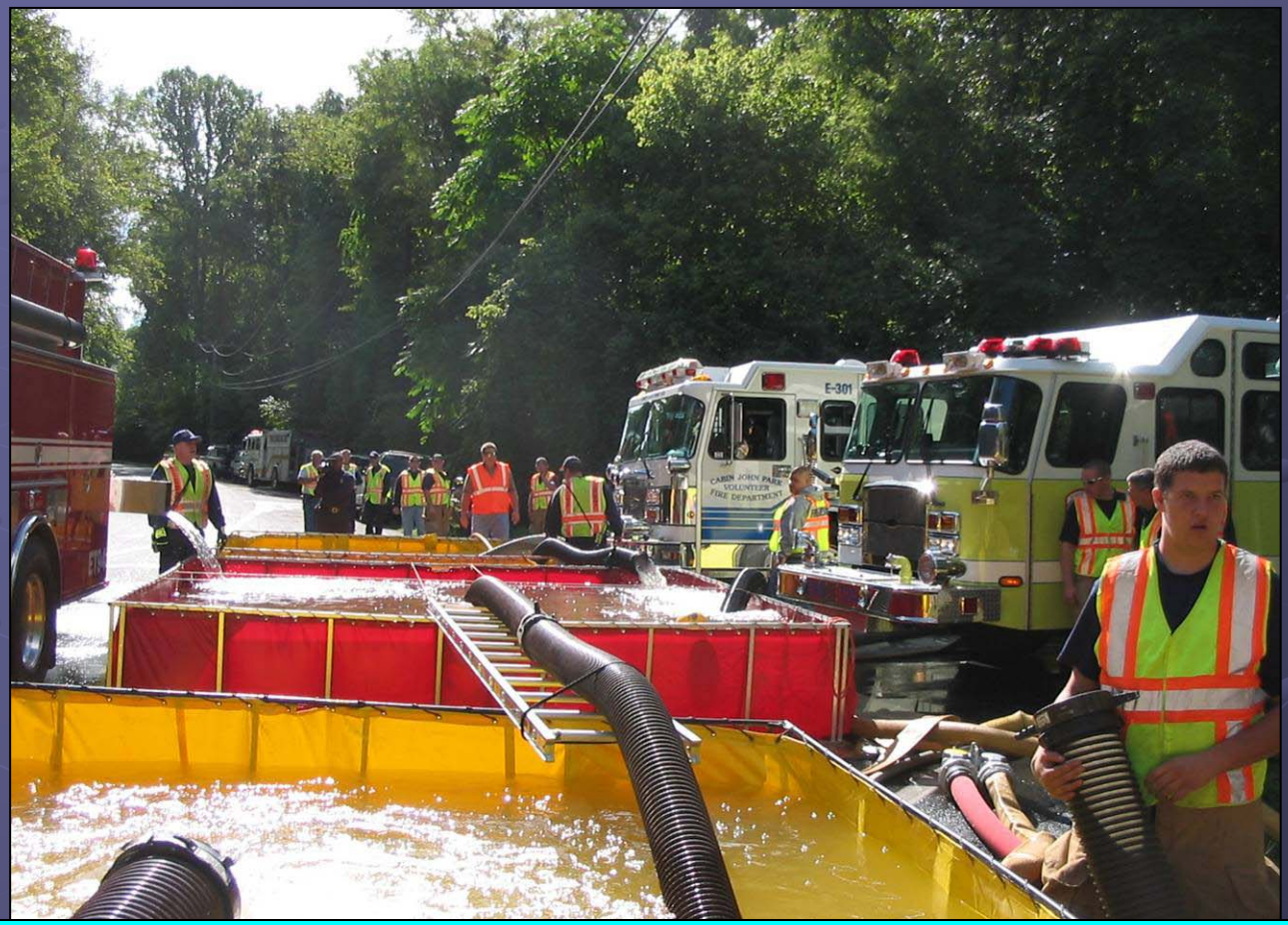
At around the 1-hour mark, the flow is increased to 1000 gpm because it appears adequate water supplies exist at the dump site.

Maintaining Flow



Because RE709 had trouble maintaining a prime, Sykesville ET124 (lime green) took over as the draft engine and Cabin John E301 (white) handled the job of pumping the jet siphons.

Maintaining Flow



Increasing the flow up to 1000 gpm was NOT part of the ISO test. However, because this was a drill and water supplies seemed adequate, the flow was increased in order to increase the challenge of the operation

Maintaining Flow

The Water Supply Officer

Patapsco River Fill Site

This fill site actually supported two, independent fill stations – both with 1500 gpm pumpers as the drafting pumpers. Even though this fill site was the longest in terms of round trip mileage – 6.3 miles – it was the site with the greatest capacity to fill tankers.

Pleasant Valley E63 (1500 gpm) Operates one of the fill stations.

Patapsco River Fill Site

While not a wide river as rivers go, the Patapsco provided ample water for tanker fill operations.

A Kochek floating strainer was used to access the river's water.

Patapsco River Fill Site

Pleasant Valley's Special Unit 6 (1500 gpm) operated one of the fill stations.

Patapsco River Fill Site

An LDH manifold with a built-in relief valve is used to fill the tankers.

Winfield Tanker 14 is shown being filled by the fill site crew.

Using Direct Fills

It is important to use the direct fills on tankers whenever possible. Here, Tanker 1 is being filled via a 5-inch LDH line connected to its direct fill intake.

Eden Mill Fill Site

While this fill site was the closest (4.6 miles) to the dump site it was the most challenging because it had a limited water supply. The site used a small stream that had a relatively slow refill rate. The smaller engine tankers were the only water transport vehicles filled at this fill site.

Eden Mill Fill Site

A bridge-mounted dry fire hydrant was used for drafting.

Eden Mill Fill Site

New Windsor's Brush 105 (1000 gpm) was used as the drafting rig for this fill site. Note the use of Storz style couplings on the suction hose.

Buckhorn Fill Site

Laytonsville's Engine 172 (750 gpm) was used as the drafting engine at this fill site. The engine's all-wheel drive ability allowed the driver to gain closer access to the water. The roundtrip mileage for this site was 9.0 miles.

Buckhorn Fill Site

A 300 gpm floating pump was used to support E172's operation.

Buckhorn Fill Site

Route 97 Fill Site

Silver Spring Engine 161 (1250 gpm) was the draft pumper at this site. Lift and water access were the two challenges here. With a roundtrip of 4.6 miles, this site was another close fill site – but it could not support large tankers.

Route 97 Fill Site

Route 97 Fill Site

40-feet of suction hose was needed to reach the stream below the bridge. Since E161 only carried two, 10-ft sections, they had to wait for the first engine tanker to arrive in order to grab two more sections.

The Results

- The drill concluded after 120-minutes of operation.
- Water flow was never interrupted at the attack engine (E142).

The Results

- However, water was lost for a short period of time around the 20-minute mark at the relay pumper when the dump site pumper was having difficulties.
- But – it is very important to note that water was never lost at the attack pumper – they had enough water in their on-board tank and the on-board tank of the relay pumper to serve as a buffer/reserve during that short period of time that water was lost at the dump site.

The Results

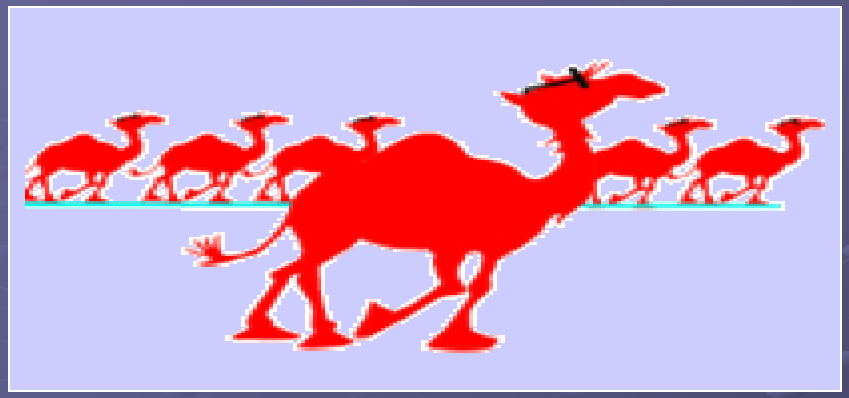
- A total of 89,400 gallons were moved during the 2-hour event resulting in an average flow of 745 gpm.
- The three, large elliptical tankers (Tanker 14, Tanker 610, and Tanker 1) were significant contributors to the shuttle by moving just over 56% of the total quantity of water that was hauled.

Summary

- The drill was a success. It showed the value of having large tankers available early in the response and the value of using multiple-dump tanks.
- It also showed the value of having large capacity pumpers inserted into a relay so that higher flows can be obtained without taxing the pump.

Summary

- All of the crews worked very well together and all of the apparatus proved quite capable of delivering water.
- Many thanks to the Winfield Community VFD for hosting the program and for the MSFA Rural Water Supply Committee for providing the support.



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