New Windsor, Maryland

Rural Water Supply Drill

Tanker Shuttle Drill
May 23, 2009
Summary Report

Overview

- On May 23, 2009, the New Windsor VFC of Carroll County, Maryland hosted a rural water supply drill.
- The drill was a joint effort between several fire departments in Carroll County to practice and improve water supply operations.
- This presentation is a summary of that drill.

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The Purpose

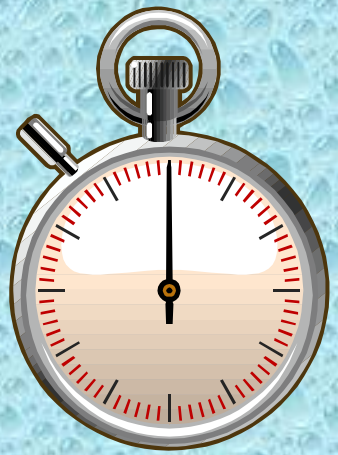
- The purpose of the rural water supply drill was to find the maximum flow capacity of a 1st Alarm plus Tanker Task Force assignment. for a known target hazard in New Windsor VFC's first due response area.

The Drill

- The drill attempted to replicate the 2-hour Water Supply Delivery Test used by ISO in their evaluation of fire department water supply capabilities.
- While in recent times, ISO has come under some scrutiny for its rating schedule, the ISO 2-hour test is still a reasonable standard by which fire departments can compare their water supply operations.

The ISO Test

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



ISO Test: 0:00 to 5:00 Minutes

- A drill location is selected and the units due to respond on the first-alarm assignment 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 once the 5-minute mark is reached.

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ISO Test: 5:01 to 15:00 Minutes

- At the 5-minute mark, a flow of at least 250 gpm must be started - and it must 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 (5+10), whatever amount of water is flowing at that time must be maintained for the remainder of the 2-hour test.

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ISO Test: 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.
- The ISO test includes the simulation of mutual aid response and allows additional water supply units to arrive and assist in the delivery process as would happen on a real incident.
- The real advantage of the ISO test is that it gives a fire department the chance to see where improvements can be made in their water supply delivery process.

It is one thing to say that your fire department can deliver 500 gpm for two hours – it is another thing to prove it in a real-life drill scenario!

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New Windsor Drill Participants

The participants for the drill were from 8 different fire departments and the apparatus was representative of the type of water supply support that would respond to a fire in the New Windsor response district.

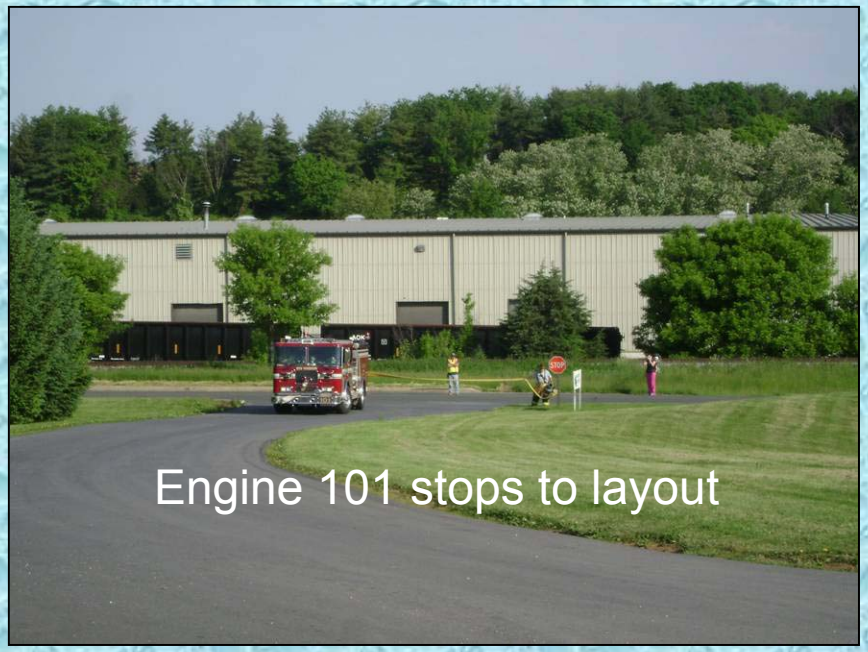
Drill Participants

- New Windsor E101
  - 2000 gpm pump w/1000 gallon tank
- New Windsor E101
  - 1500 gpm pump w/1000 gallon tank
- Westminster E32
  - 1500 gpm pump w/1000 gallon tank
- Winfield E141
  - 1500 gpm pump w/750 gallon tank
- Pleasant Valley Tanker 6
  - 3250 gallon tank w/1500 gpm pump
- Winfield Tanker 14
  - 3500 gallon tank w/1500 gpm pump

Drill Participants

- Gamber ET133
  - 1500 gpm pump w/2500 gallon tank
- Mt Airy ET14
  - 1500 gpm pump w/2000 gallon tank
- Harney ET112
  - 1500 gpm pump w/2500 gallon tank
- Pleasant Valley Special Unit 6
  - 1500 gpm pump
- New Windsor Brush 105
  - 1000 gpm pump
- Reese Brush 95
  - 1000 gpm pump

The Drill Begins



Engine 101 stops to layout

Engine 101 lays 600 ft of 4-inch hose and stops in parking lot.

The target hazard that was chosen for the drill was a light, industrial occupancy located on Avondale Road between New Windsor and Westminster. With all personnel and apparatus staged at the New Windsor firehouse, the drill commenced. Four engines, two tankers and a brush truck were dispatched simulating a 1st alarm structure fire response. New Windsor E101 is shown above arriving on the scene and laying out.

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Supply Engine Arrives

New Windsor Engine 102 arrives and starts to set up as the dump site engine.

Crews Continue Setting Up

Engine 102 connects to E101's supply line by removing the Humat valve and connecting a short section of 4-inch hose. Westminster Engine 32 arrives on the scene and is directed to give its water to E102.

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Clappered Siamese?

When connecting E102 to E101's supply line, the crews elected not to utilize any type of control valve which proved to be problematic later in the drill.

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250 gpm Flow is Started

At 2:52 minutes – a bit ahead of schedule – a 250 gpm handline it put into operation by E101's crew.

Engine 32 Pumps Off its Water

At 6:26 minutes, E32 begins pumping off its water to E102. Without a clappered siamese, E32 must pump into E102 and then E102 can pump to E101.

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First Tanker Arrives

At 6:30 minutes, Tanker 6 arrives on the scene and the crew begins to help in setting up the dump site.

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Dump Site Set-Up

E102 is positioned to draft using its front suction. Crews are shown above getting ready to set-up Tanker 6's 3,500-gallon dump tank.

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Dump Site Set-Up

The dump site is set-up in a manner so that one lane of traffic can “get by.”

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Dump Site Set-up

With Tanker 6’s 3,500-gallon dump tank in position, the tanker prepares to pump water to E102 through a 5-inch line until a draft is obtained.

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2nd Tanker Arrives

At 11:10 minutes, Winfield Tanker 14 (3,500 gallons) arrives at the dump site.

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Dump Site Set-up

Crews continue to work to set-up the dump site. Additional suction hose is being taken off of Tanker 6 to use in the dump site operation – perhaps for drafting or jet siphon use.

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4th Engine Arrives

At the 11:59 minute mark, Winfield E141 arrives and pumps off its water to E102 since the dump site is not ready yet.

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750 gpm

At 16:30 minutes, the flow is moved to 750 gpm and the attempt to sustain that flow is started.

Tanker 14 Offloads

With Tanker 6 pumping water to E102, Tanker 14 dumps the first load of water into the dump tank at 17:06 minutes.

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Tanker Task Force Arrives

A Tanker Task Force was dispatched upon notification of a working fire. Gamber Engine/Tanker 133 arrives on the scene at 21:03 minutes and dumps its load of water.

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Dump Site Expansion

Using the 3,500-gallon tank from Tanker 14, the dump site crews work to expand the site to a two-tank operation.

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Mt Airy Engine Tanker 14 Arrives

Mt Airy Engine/Tanker 14 – from the Tanker Task Force – arrives on the scene at 29:47 minutes and dumps its first load of water.

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Another Tanker Dumps

At 32:00 minutes, Harney Engine/Tanker 112 – from the Tanker Task Force – arrives on the scene and dumps its water.

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Two Dump Tanks Used

Two, 3,500-gallon dump tanks were used to support the water supply operations at this drill.

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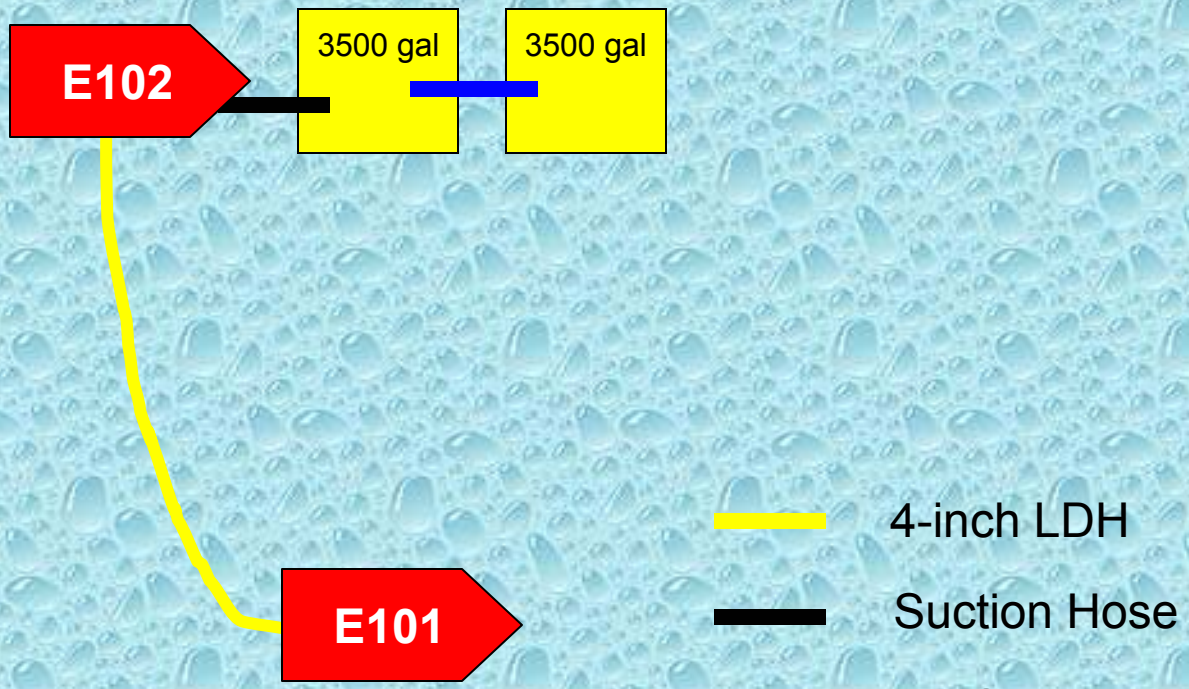
Dump Tank Layout



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The Fill Sites

- Three fill sites were used for the drill; each one utilized a stream.
- The Old New Windsor Pike fill site was supported by Engine 32, a 1,500 gpm pumper. This fill site provided a 3.9-mile round trip for rigs hauling water.
- The Wastewater Treatment Plant fill site was run by Special Unit 6, a 1,500 gpm support unit. This fill site provided a 3.7-mile round trip.
- The Stone Chapel Road fill site was run by Brush 95, a 1,000 gpm support unit. This site had a 3.3-mile round trip.

Old New Windsor Pike Fill Site

Plenty of water was available at this fill site and E32 used a floating strainer and 30-ft of suction hose to access the stream.

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Old New Windsor Pike Fill Site

E32's crew used 5-inch hose to fill tankers. An LDH manifold was used as the control valve.

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Wastewater Plant Fill Site

Pleasant Valley Special Unit 6 drafted from a stream (clean) near the Westminster Wastewater Treatment Plant. The stream had plenty of water and they accessed that water using a floating strainer.

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Wastewater Plant Fill Site

The unit then pumped water through a couple hundred feet of 5-inch hose to an access point near the main roadway.

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Wastewater Plant Fill Site

A jumbo wye was used as the control valve on the 5-inch lines used for filling tankers.

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Stone Chapel Road Fill Site

This fill site was a bit challenging given the lift and the shallow stream. However, the crew from Reese Brush 95 did a nice job of establishing a draft and filling tankers.

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Stone Chapel Road Fill Site

The 10+ feet of lift made the 1000 gpm pump work a bit harder – but successfully.

Stone Chapel Road Fill Site

In order to keep the floating strainer in the deeper area of the stream, a couple of hand tools were used as stakes to secure the device in place. Good thinking!

The Results

- The drill ran a full 2-hours and the shuttle operation “stabilized” at 750 gpm at around the 44:00 minute point when the first tanker (Mt Airy ET14) returned from the fill site ready to dump again.
- ***Water flow was interrupted at the attack engine at the 27:00 minute and at the 36:03 minute marks.***
- As with many fire scene operations, some miscommunication and human error caused the problems in sustaining flow.
- By not using the clappered siamese, the initial set-up made it difficult to pump water directly to the attack engine without first pumping it to the supply engine.

The Results

- Unfortunately – had this been a true ISO evaluation, the operation would have been considered a failure. Fortunately – it was a drill and it was considered a success because learning occurred.
- Approximately 89,000 total gallons were moved during the 130 minute event (the first 5 minutes no water was moved) resulting in an ***average flow of 684 gpm***. However, this rate was really only achieved in the 2nd half of the drill.

Lessons Learned

- When setting up to supply an attack engine using a supply engine that will draft from a portable dump tank, consider using some type of in-line control valve.
- The folks in the New Windsor area have had success using a clappered siamese which allows another unit to pump water to the attack engine without having to have the water first go to the supply engine.
- The clappered siamese was left out at this drill and that posed some problems early in the operation.

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Lessons Learned

- Front intakes on pumpers are generally not designed to flow the rated capacity of the pump from draft.
- At this drill, E102 struggled to provide 750 gpm while drafting through the front intake. In fact – it could barely do it.
- Near the end of the drill, the crews switched the suction to the side and the pumper easily pumped the required flow with plenty of residual pressure available at the attack engine's intake.

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Summary

- The drill was a success. It re-emphasized how the initial actions taken effect the overall outcome. It also showed that front suction intakes are limiting in volume and great caution should be exercised when deciding to use them for drafting operations.
- Many thanks to the New Windsor VFD for sponsoring the drill and to all of the fire departments who provided support to the seminar.

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