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Valley Shore Mutual Aid Association
Killingworth, Connecticut

Rural Water Supply Operations Seminar
2-hr Water Supply Drill
April 7, 2013
Summary Report

The Purpose

- The purpose of the seminar and drill was to review the basics of rural water supply operations and to practice water supply operations in a non-hydranted setting.
- The drill also allowed mutual aid companies to work together in a real-life training situation.

The Seminar

- The 2-day seminar started on Saturday with a 4-hour classroom session to review the basics of rural water supply operations.
- The review session was held at the Haddam-Killingworth Middle School.
- Once the classroom part was done, the seminar continued with several hours of practical work on fill-site and dump site operations.
- The program concluded on Sunday with the 2-hr ISO tanker shuttle exercise and program review.
- Seminar participants were from the Valley Shore Mutual Aid Association and surrounding area.

The Seminar

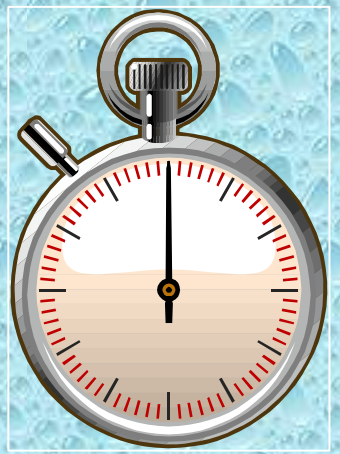
- The seminar was very well supported by the Mutual Aid Association as well as several local vendors.
- Kochek Fire Equipment raffled off several suction strainers and other water supply devices and Husky Portable Tanks gave away two, 2100 gallon dump tanks!

The 2-hour Water Supply Drill

- The tanker shuttle drill was held on April 5th at the Haddam-Killingworth Middle School.
- 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 everyone in the fire service may not agree on ISO's evaluation of fire department capabilities, the 2-hour test is still a reasonable standard by which fire departments can compare their water supply operations.

The ISO Test

- The ISO 2-hour Water Supply Delivery Test has three critical time segments:
  - 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.

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.

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 automatic 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!

Water Supply Drill Participants

- *The participants for the drill were from more than 15 different fire departments and the water hauling apparatus was representative of the type of water supply support that would respond to a structure fire in Mutual Aid area.*

Drill Participants

- Guilford Tanker 163
  - 3,500 gallons
- Madison Tanker 261
  - 3,000 gallons

Drill Participants

- Westbrook Tanker 463
  - 3,000 gallons
- Haddam Tanker 2-13
  - 2,000 gallons

Drill Participants

- Essex Tanker 663
  - 1,800 gallons
- Chester Tanker 765
  - 2,100 gallons

Drill Participants

- Killingworth Tanker 862
  - 2,000 gallons
- Killingworth Tanker 868
  - 2,000 gallons

Drill Participants

- Clinton Tanker 962
  - 2,500 gallons
- Old Lyme Tanker T381
  - 1,800 gallons

Drill Participants

- Middlefield Tanker MF-5
  - 2,500 gallons
- Durham Tanker D
  - 2,500 gallons

Drill Participants

- North Madison Tanker 10-68
  - 3,000 gallons
- Lyme Tanker Y-14
  - 3,000 gallons

Drill Participants

- Deep River Tanker 5-6-1
  - 1,800 gallons

Preparation

Units staged in the parking lot at the middle school. Crews were briefed and units were prepared for dispatch.

The Drill Begins

The drill began with Old Lyme's hose reel pumper (1,500 gpm) laying a 900-ft supply line of 5-inch LDH from an aerial tower in the rear of the school.

Dump Site Set-up

As soon as the pumper crew got the rig into position, the first tanker arrived and a dump tank was set-up in front of the Old Lyme pumper.

Dump Site Set-up

The crews worked feverously to get the first dump tank up and running so that water flow could start. The plan was to eventually move to multiple, intake suctions after getting started with just one.

Dump Site Set-up

With everything set up, water is dumped into the first tank and water flow is started. One issue that arose was the position of the low level strainer in the dump tank in relation to where the tankers were to dump their water.

Dump Site Set-up

Essex's tanker was the second tanker to arrive and crews hustled to get a second dump tank set-up in preparation for increasing the flow.

Water Flow is Started

At the 6:08-minute mark, water flow was started at 500 gpm to the first aerial tower.

Dump Site Set-up

At the 7:51-minute mark, two dump tanks were in operation with a third in the process of being set up.

Dump Site Operations

All of the tankers were very well equipped with suction hose and appliances – this made it easy to build out the water transfer devices for a multiple tank operation.

Dump Site Operations

At the 8:20-minute mark, three dump tanks were in operation and the flow was pushed to 935 gpm.

Second Suction at 26:18 mins

In order to increase flow, the dump site pumper crew connected a second, 6-inch suction line using the officer's side inlet. The pumper is outfitted with an MIV on all inlets – this drill is a good example of why suction inlet control valves are so useful on pumpers.

Dump Site Operations

With four dump tanks now in operation, the flow was moved to 1,100 gpm at around the 44:00-minute mark.

Strainer Issues

The low level strainer on the first suction line created a few issues throughout the drill – it kept trying to flip over and was also susceptible to taking in air when tankers dumped their water in that area of the dump tank.

Dump Site Operations

At around the 48:00-minute mark, a second pumper (Killingworth Engine 1) was placed into operation at the dump site to run jet siphons. The flow was then moved to 1,300 gpm.

Water Flow Maximized at 1300 gpm

Flow to the first aerial tower could not be increased above 1,300 gpm - most likely because of a flow limitation at the rear discharge on the Old Lyme pumper and because of the 900-ft of 5-inch hose – the hose had reached its test pressure limitation.

Expanding the Operation

With the flow maximized at 1,300 gpm, action was taken to expand the operation to use all of the available resources. A second, 5-inch LDH supply line was laid (using another pumper) to the rear of the school in order to supply a second, aerial tower.

Dump Tanks 5, 6 and 7

With the second supply line in operation, the dump site grew by three additional dump tanks – which were operated by the Killingworth pumper.

Expanding the Operation

The Killingworth pumper (in the far background) supplies a 5-inch double-clappered siamese that feeds 900 feet of 5-inch to the second aerial tower.

Water Transfer Operations

Of course, water transfer operations were critical to the success of this "big water" drill. An 8-inch Holley Tube (Kochek) is shown here being used as one of transfer mechanisms.

Water Transfer Operations

Two additional jet siphons were supplied using the gated wye arrangement shown above. The advantage of using the gated wye set-up is that it takes the jet siphon operation away from the pump operator – making one less concern for the operator. The disadvantage is that the wye requires another person to operate it.

Water Transfer Operations

Two additional jet siphons were supplied by this pre-piped wye on the front of the Killingworth pumper.

Dump Site Operations

With the second dump site pumper now in operation, actions were underway to increase the flow again.

8th Dump Tank

The red dump tank in the foreground was the 8th and final dump tank placed into operation.

Water Flow Moved to 2,300 gpm

At the 60:00-minute mark, the second 5-inch supply was charged and at the 72:00 minute mark – flow was moved to 2,300 gpm.

Dump Site Operations

With the flow now at 2,300 gpm, the need to dump multiple tankers at the same time became very important as did the ability to transfer water between dump tanks.

Dump Site Operations

One more push was made to try and maximize the flow. Additional suctions were added to the Killingworth pumper in an effort to take in more water.

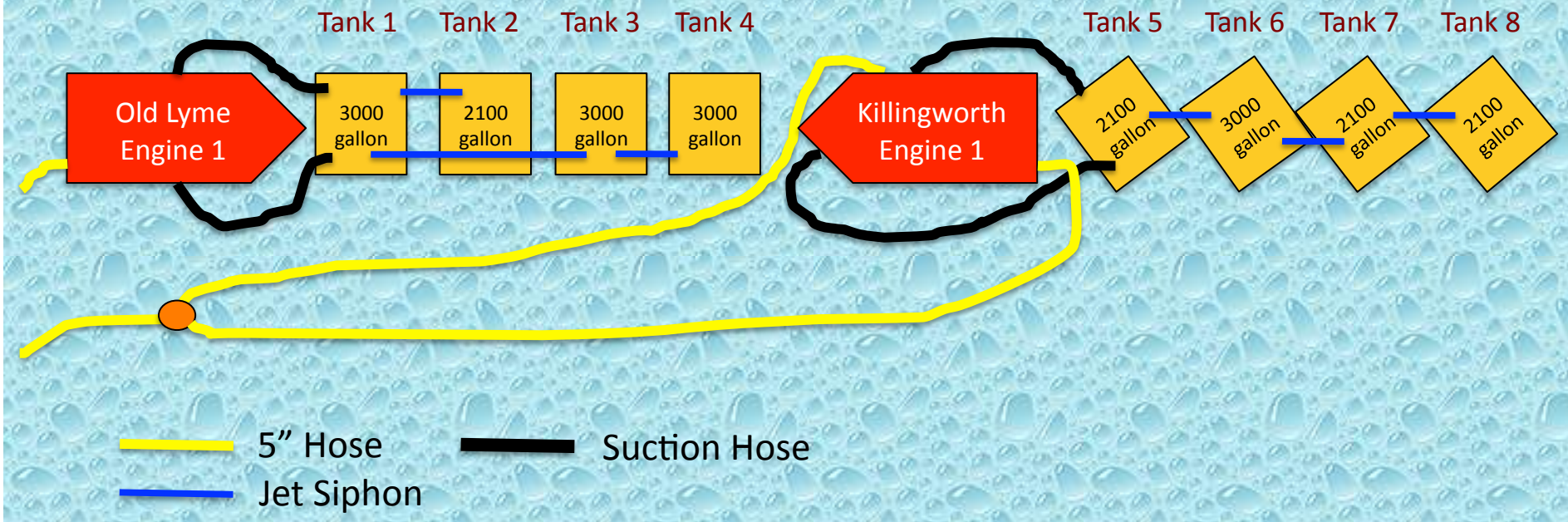
Dump Site Operations

The Killingworth pumper used three suction lines in order to maximize its flow potential – this is another reason to carry additional lengths of hard suction hose.

Dump Site Operations

At the 110-minute mark, the flow was finally maximized at 2,400 gpm!!! The most every recorded by GBW Associates in a tanker shuttle exercise.

Final Dump Site Layout



The Fill Sites

- For this drill – two fill sites were used.
- Both fill sites provided a 2.7-mile roundtrip for the units hauling water and used the same pond as the water source.
- The fill site was located along Lovers Lane and required pumpers to draft from the roadway.
- The pond provided ample water volume to support the drill and access was not a problem.
- Two pumpers were used at the pond to operate independent fill stations.

Fill Site Operations

Chester Engine 3 (2,000 gpm) used dual suctions and 5-inch LDH to fill tankers at a rate of around 1,500 gpm. Very Impressive!

Fill Site Operations

Floating strainers were used because of the silted bottom of the pond and the aquatic vegetation.

Fill Site Operations

Durham Engine 1 (2,250 gpm) also used dual suctions and 5-inch LDH to support their 1,500 gpm tanker fill station.

Fill Site Operations

Durham's top mounted pump panel made it easy to run the additional suction hose.

Fill Site Operations

To enhance operations, the Durham crew added a third suction using the pump's 2-1/2-inch auxiliary intake.

Fill Site Operations

The pond had ample water to support the two fill site set-ups.

Fill Site Operations

Access to the water was not a problem and lift was minimal making it a perfect site for a large flow tanker fill operation.

Fill Site Operations

Crews used short lengths of 3-inch hose outfitted with Storz fittings to load the tankers.

Fill Site Operations

Most of the tankers were filled at well over the 1,000 gpm fill rate – which made this fill site a perfect set-up to support the 2,400 gpm at the school.

The Results

- The drill was stopped at the 2:00-hour mark.
- Water flow was interrupted a couple of times while crews made changes to enhance the flow.
- An estimated 175,853 gallons of water were flowed through the two aerial towers during the drill producing an average flow rate of 1,605 gpm.

The Lessons Learned

- At this drill, the dump site was set-up very quickly and crews really hustled to sustain the water flow in the early stages.
- Every tanker was very well equipped with appliances and suction hose making it easy for the both the dump site and the fill site to produce the high flows needed for this operation.
- The school layout provided ample space for this large operation and traffic flow was not a problem.

The Lessons Learned

- A tanker fill-site needs to run like a NASCAR pit stop and these two fill sites did just that.
- At this drill, the use of quick-connect fittings made a huge difference in making and breaking connections at the fill site.
- In addition, the Valley Shore Mutual Aid Association has an SOP on fill site set-up and operation and it was clear that the SOP makes a big impact on their operation.

The Lessons Learned

- Jet siphons, suction hose, and dump tanks are needed at most every dump tank operation – therefore, it is wise to carry those items on every tanker – which they were!
- The "bundling" of water hauling mutual aid resources has proven successful in many drills. The tanker strike team concept again proved to be an effective process for requesting and using additional rural water supply resources.

Summary

- The drill was a huge success. The logistical support was the best ever for a GBW Seminar and the flow achieved the highest!
- For the new folks, they got to see how dump tank operations work.
- For the older, experienced folks, it was a chance to practice their "craft."
- The success of the drill showed the importance of mutual aid response practices and procedures – and the importance of mutual aid interoperability.
- Many thanks to Valley Shore Mutual Aid Association for sponsoring and hosting this seminar.

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This program was developed by
GBW Associates, LLC

For more information contact us at
thebigcamel@gotbigwater.com