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York County Fire & EMS Training School
York County, Maine

Rural Water Supply Operations Seminar
2-hr Water Supply Drill
September 25, 2016
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 students to work together in a real-life training situation.

The Seminar

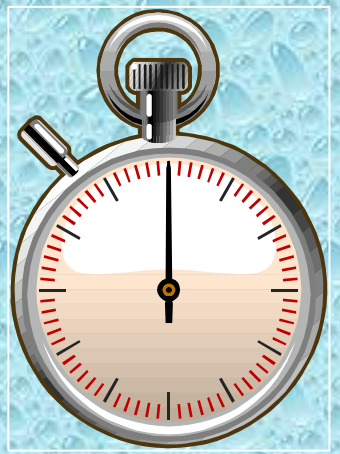
- The 2-day seminar started with a 4-hour classroom session to review the basics of rural water supply operations.
- The review session was held at the Saco fire station.
- Once the classroom part was done, the seminar continued with 8 hours of practical work on fill-site and dump site operations.
- The program concluded with the 2-hr ISO tanker shuttle exercise and program review.
- Seminar participants were from the York County area.

The 2-hour Water Supply Drill

- The tanker shuttle drill was held on September 25th in Kennebunk at an office complex.
- 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 ISO no longer uses the physical demonstration of water supply delivery*, the 2-hour test is still a reasonable standard by which fire departments can compare their water supply operations.
- *ISO now uses computer modeling to predict tanker shuttle flow capabilities.*

The 2-Hour Test

- The 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 numerous fire departments throughout York County – with a few folks from nearby New Hampshire. The seminar was part of the 43rd Annual county-wide fire school and the drill provided the opportunity to practice the skills learned earlier in the weekend.*

Drill Participants

- Kennebunk Tank 22
  - 500 gpm pump w/1,800 gal tank
- Ross Corner Engine 2
  - 1,250 gpm pump w/1,800 gal tank

Drill Participants

- Berwick Tank 4
  - 750 gpm pump w/3,000 gal tank
- Lebanon Tank 6
  - 1,250 gpm pump w/3,000 gal tank

Drill Participants

- Alfred Tank 1
  - 1,250 gpm pump w/2,500 gal tank
- Kennebunkport Tank 1
  - 500 gpm pump w/3,500 gal tank

Drill Participants

- Goodwins Mills Engine 83
  - 1,500 gpm pump w/1,000 gal tank
- Waterboro Engine 3
  - 1,250 gpm pump w/1,000 gal tank

Drill Participants

- Arundel Tank 312
  - 500 gpm pump w/2,000 gal tank
- Saco Engine 1
  - 1,250 gpm pump w/2,500 gal tank

Preparation

Units staged in the parking lot of the office complex where they received drill assignments and a safety briefing.

The Drill Begins

Waterboro Engine 3 (1,250 gpm) was the first-arriving unit and assumed the role as the attack pumper. The crew divided up tasks and deployed a supply line to a hose diffuser/flow device. They also grabbed a 2,100-gal dump tank from the first-arriving tanker. The stopwatch was started when the engine driver applied the air brakes.

Dump Site Operations

The decided to go immediately to a dump tank operation in lieu of a nurse tanker operation. Thus, they had to work fast to get that first dump tank set-up and ready for water.

Dump Site Operations

Engine 3 did not have a high-flow discharge, therefore they set up dual 2-1/2-inch lines to supply a clappered siamese which then fed the 200-feet of 5-inch hose to the Hose Monster flow diffuser.

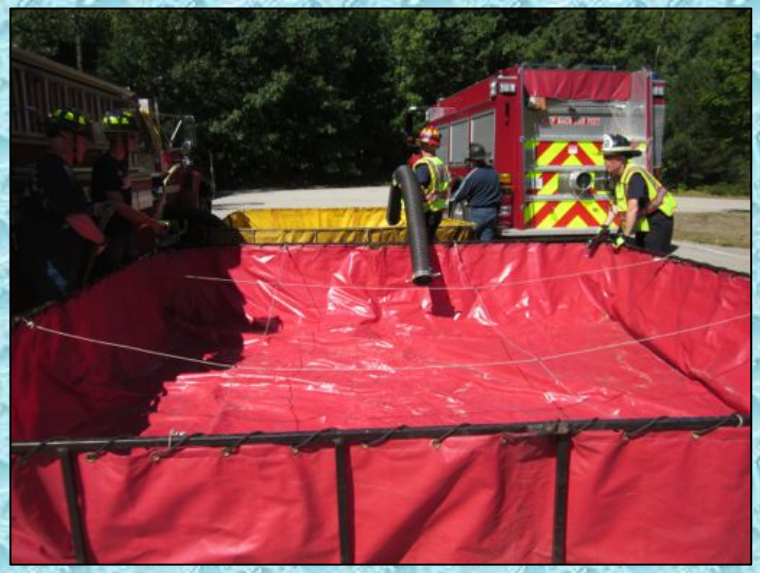
Water Flow Started

The first dump tank was set-up before water flow was started. The external butterfly valve on the pumper allowed the operator to flow water at the 5-minute mark while crews still worked to finish the drafting set up. Flow was started at 250 gpm at the 5-minute mark.

Dump Site Operations

As water flow was being started using Engine 3's tank water, Kennebunk Tank 22 moved into position and dumped its first load of water. The operation was then transferred to a drafting operation and continued as such for the remainder of the drill.

Dump Site Operations



Kennebunkport Tank 1 arrived next and brought a 3,500-gallon dump tank with it – which was deployed. The crews decided to change the location of the second dump tank in order to keep the edges of the two tanks even. The larger dump tank was placed in front of Engine 3 in order to accommodate that layout.

Dump Site Operations

Kennebunkport's 3,500-gal vacuum tanker was the second tanker to dump water. The vacuum tanker ended up hauling the most loads of water during the drill because the driver was able to self-load the tanker without the need for a fill site pumper.

Dump Site Operations

By the 14:30 minute mark, three dump tanks were down and one was in operation as additional tankers were now being dispatched using the “tanker task force” concept.

Dump Site Operations

At the 19-minute mark, three dump tanks were in operation and flow was now at 500 gpm.

Dump Site Operations

Flow was moved to 750 gpm at the 30-minute mark. One the of issues that arose was drafting from the smaller dump tank – the 2,100-gal yellow tank shown above. The crew decided to switch drafting operations to the 3,500-gal dump tank in front of the pumper. The crew is shown here getting ready to make that switchover.

Dump Site Operations

Water transfer operations were critical to the success of this drill since the yellow tank was being emptied quite fast. Eventually this was all corrected by switching the draft to the 3,500-gallon dump tank and re-arranging the jet siphons.

Dump Site Operations

At the 60-minute mark, flow was moved to 900 gpm. Engine 3 had no trouble supporting that flow because of the use of the siamese. The pumper also supported two, jet siphons. A 2-1/2-inch suction was added at the 60-minute mark to allow more water into the pump.

Dump Site Operations

A 400-gpm portable pump was used to take over the operation of one jet siphon, thus allowing the pumper to focus more on supporting the fire attack operation.

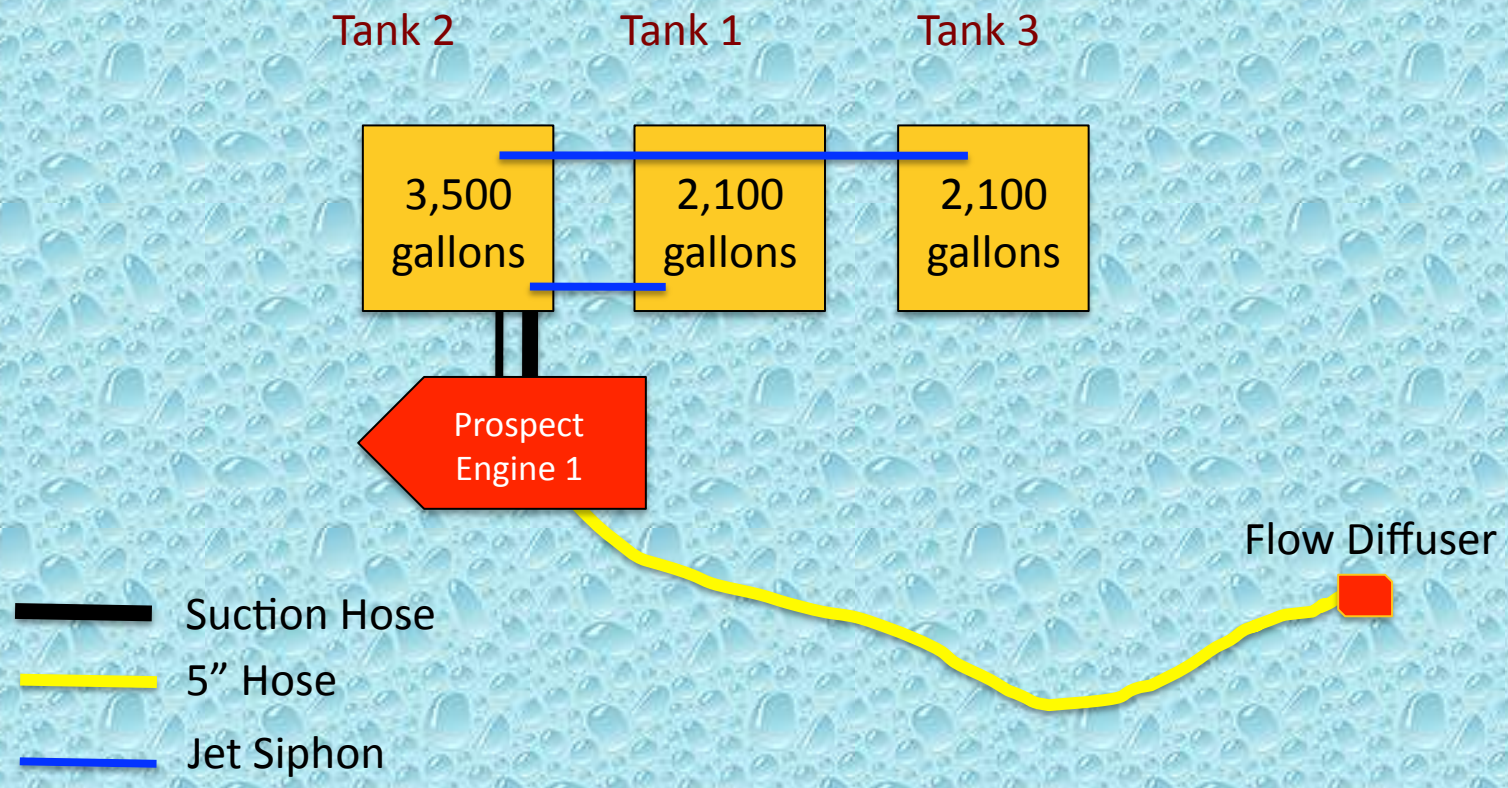
Dump Site Operations

At maximum throttle, the pump had a 90 psi discharge pressure. The pump took suction from a 2,100-gallon dump tank and supplied a jet siphon via 50-ft of 1-3/4-inch hose. That jet siphon pushed water through 30 feet of 6-inch suction hose. This set-up worked really well.

Dump Site Operations

The final set-up. This 3,500 dump tank became the primary dump tank from which the dump site pumper drafted and supported the 900 gpm flow. Additional flow capability existed at the dump site, however fill site capability did not. Thus the flow was maximized at 900 gpm.

Dump Site Layout



The Fill Sites

- For this drill – two fill sites were used. Both were located at the same industrial facility and provided a 2.6-mile round trip for the units hauling water.
- The first fill site set up was located at a mill dam on the Mousam River. The river provided ample water volume to support the drill and access was not a problem.
- A single, 1,500 gpm pumper was used at the dam to support the tanker fill station.

The Fill Sites

- The second fill site was located at a fire hydrant about 400 feet from the first fill site.
- The fire hydrant provided ample water volume to support the drill and access was not a problem.
- A single, 1,250 gpm pumper was used at the fire hydrant to support the tanker fill station.

Dam Fill Site

The dam had plenty of water access and availability to support a large scale loading operation. Goodwins Mills Engine 83 (1,500 gpm) is shown here setting up the first fill site.

Dam Fill Site

Kennebunkport's vacuum tanker self-loaded and did not need the support of a fill site engine or crew. Once the tanker's suction hose was deployed, it was left in place for all future loading operations. The vacuum tanker hauled the most loads of water during the drill.

Dam Fill Site

LDH was used to load many of the tanker that came to the dam fill site. While two tankers could be connected at the same time, only one was loaded at a time.

Dam Fill Site

Fill site crews had to get a bit creative with valves and appliances in order to accommodate the different loading arrangements.

Dam Fill Site

Some tankers were loaded using 3-inch hose. Alfred Tank 1 is shown here being loaded using dual, 3-inch lines.

Hydrant Fill Site

Ross Corner Engine 2 (1,250 gpm) used a fire hydrant to load tankers. The fire hydrant supplied plenty of volume to Engine 2 in order to support the loading operation. Tankers loading at the fire hydrant were loaded using 3-inch hose.

The Results

- The drill was stopped at the 105-minute mark due to time constraints.
- Water flow was interrupted only once during the entire drill – at the 96-minute mark when no tankers were available at the dump site.
- A peak flow of 900 gpm was sustained during the last 45 minutes of the drill.

The Lessons Learned

- At this drill, crews chose to go immediately to a dump tank operation without using a nurse tanker. They did a great job of getting that first dump tank set-up and ready for water before water flow was started.
- The dump site pumper had a butterfly valve on the officer side suction inlet which allowed the operator to begin water flow using the onboard tank water while crews set up for drafting.

The Lessons Learned

- Dump tank arrangement is critical to successful dump site ops. At this drill, the 2nd dump tank was relocated before water was dumped into it so that the tanks would be aligned better for the side dumping tankers.
- Jet siphons consume pump capacity. Shedding the jet siphon operation to the portable pump allowed the flow to be increased to the attack pumper if needed.

The Lessons Learned

- A tanker fill-site needs to run like a NASCAR pit stop. Anything that slows down the loading of tankers is going to reduce the efficiency of the tanker shuttle.
- At this drill, there were different tanker fill connections which required adaptors and thus slowed down some of the fill operations.
- Having a standardized fill connection for all tankers increases fill efficiency and decreases fill time.

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 – as well as adaptors.
- The "bundling" of water hauling mutual aid resources has proven successful in many drills. The tanker task force concept again proved to be an effective process for requesting and using additional rural water supply resources.

Drill Videos

Be sure to watch videos from the drill on the GotBigWater YouTube Channel.

Summary

- The drill was a success. 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 the York County Chiefs 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