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Patterson Fire Department No. 1
Patterson, New York

Rural Water Supply Operations Seminar
2-hr Water Supply Drill
July 31, 2022
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

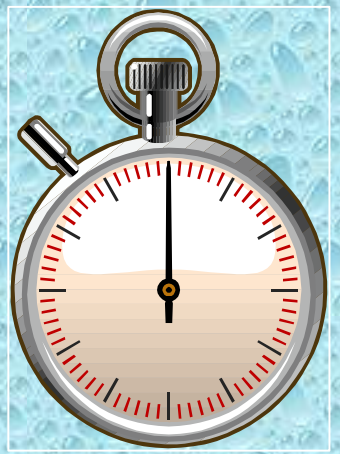
- The 2-day seminar started with a 4-hour classroom session to review the basics of rural water supply operations.
- The review session was held at the Patterson fire station.
- Once the classroom part was over, the seminar continued with 8 hours of practical work on fill-site and dump site operations.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

The 2-hour Water Supply Drill

- The tanker shuttle drill was held on July 31st at a nearby pharmaceutical facility
- 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 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

Participants				
Department	**Unit**	**Pump Size**	**Tank Size**	**Dump Tank**
Patterson	Engine 22-2-4	2250 gpm	2500 gal	NA
Patterson	Tanker 22-4-2	1500 gpm	2800 gal	3000 gal
Putnam Lake	Engine 23-2-5	2000 gpm	2500 gal	3000 gal
Mahopac Falls	Tanker 19-4-1	1500 gpm	2500 gal	NA
Brewster	Tanker 11-4-2	1750 gpm	2500 gal	3000 gal
Putnam Valley	Tanker 24-4-1	1000 gpm	2500 gal	2500 gal
Lake Carmel	Tanker 17-4-1	1000 gpm	2500 gal	2500 gal
Croton	Tanker 10	1250 gpm	3000 gal	(2) 3500 gal
Bedford	Engine 108	1500 gpm	300 gal	NA

- *The participants for the drill were from several different fire departments in the Putnam County region and the water hauling apparatus was representative of the type of water supply support that would respond to a structure fire in the Patterson area.*

Drill Participants

- Patterson Engine 2-4
  - 2250 gpm pump w/2500 gal tank
- Patterson Tanker 4-2
  - 1500 gpm pump w/2800 gal tank

Drill Participants

- Mahopac Falls Tanker 4-1
  - 1500 gpm pump w/2500 gal tank
- Brewster Tanker 4-2
  - 1750 gpm pump w/2500 gal tank

Drill Participants

- Putnam Valley Tanker 4-1
  - 1000 gpm pump w/2500 gal tank
- Putnam Lake Engine 2-5
  - 2000 gpm pump w/2500 gal tank

Drill Participants

- Lake Carmel Tanker 4-1
  - 1000 gpm pump w/2500 gal tank
- Croton Tanker 10
  - 1250 gpm pump w/3000 gal tank

Drill Participants

- Bedford Engine 108
  - 1500 gpm pump w/300 gal tank

The Drill Begins

The drill began with Patterson Engine 2-4 (2250 gpm/2500 gal) setting up to supply water to an aerial tower while at the same time moving towards a dump tank operation. Patterson Tanker 4-2 was the first arriving tanker.

Dump Site Operations

The first suction line deployed was the 6-inch front suction on Engine 2-4. Plans were under way to eventually use triple suctions. The front suction was a quick start to get water supply operations underway.

Dump Site Operations

A 400 gpm flow was started at the 5-minute mark. Patterson's aerial tower was used as the discharge point in the drill. A ground monitor was used during the first ½-hour of the drill.

Dump Site Operations

Dump site crews work to get a second, 6-inch suction line in operation. Each suction inlet on Engine 2-4 had a control valve which allowed additional suction lines to be brought on-line without interrupting flow to the aerial tower.

Dump Site Operations

Around the 20-minute mark the flow was moved to 500 gpm and two dump tanks (3000 gal) were up and running.

Dump Site Operations

By the 35-minute mark flow was moved to 800 gpm and then again to 1250 gpm at the 52-minute mark. Three dump tanks were now in operation.

Dump Site Operations

Double suctions in use. All water to the aerial tower was supplied via a single, 5-inch line about 400-ft long.

Dump Site Operations

As the flow increased water transfer operations became really important. Four jet siphons were used to support the operation. A fourth dump tank was deployed and placed in-service as well.

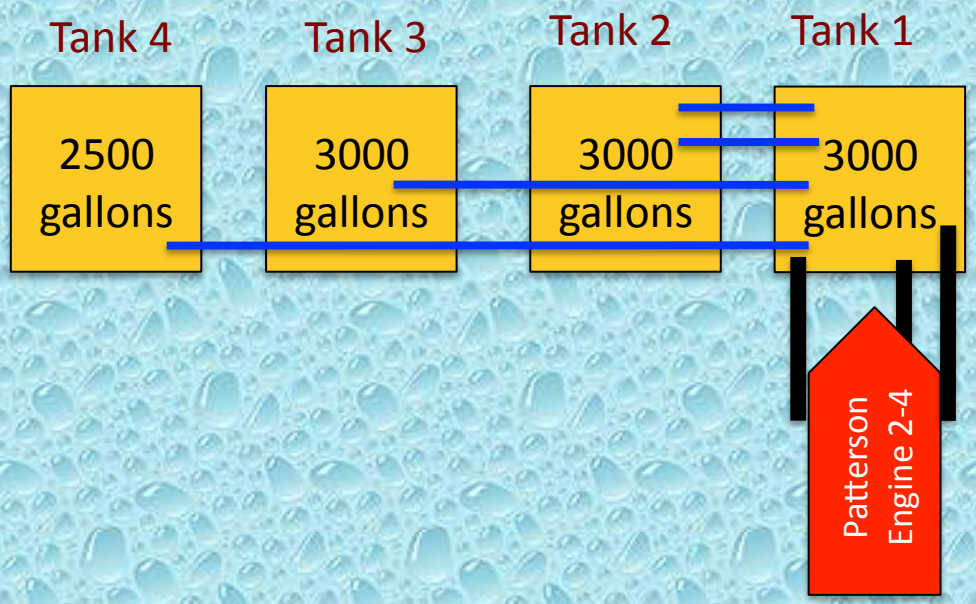
Dump Site Operations

Around the 67-minute mark a flow of 1310 gpm was reached using the single, LDH discharge on Engine 2-4. The engine drafted through triple suctions, flowed 1310 gpm, and supplied water to run four jet siphons.

Dump Site Operations

As flow increased it was important to be able to dump two tankers at one time and keep multiple jet siphons running.

Dump Site Layout



Suction Hose

Jet Siphon

The Fill Sites

- For this drill – two fill sites were used; both were ponds.
- The Watchtower fill site provided about a 1.8-mile round trip for the units hauling water; the firehouse fill site about a 2.4-mile roundtrip.
- The ponds had ample water volume to support the drill and access was not a problem.
- A 1500 gpm pumper was used to load tankers at each pond.

Watchtower Fill Site

Mahopac Falls Tanker 4-1 (1500 gpm/2500 gal) arrives at the Watchtower pond and goes to work setting up to draft using the dry fire hydrant.

Watchtower Fill Site

The crew used double, 6-inch suction lines to access the pond water. The first line used the dry fire hydrant and the second line went straight to the pond and used a barrel strainer suspended on a roof ladder.

Watchtower Fill Site

The 6-inch suction hose on the auxiliary intake was not an ideal arrangement but it did work and it did allow the pumper to take in more water. The gated intake allowed the second suction to be brought on line without interrupting flow operations.

Watchtower Fill Site

Two, tanker fill lines were set up off the pumper. One was supplied by LDH (red) the other was supplied by two smaller lines siamesed into a 5-inch line.

Firehouse Fill Site

Bedford Engine 108 (1500 gpm) drafted from the pond located at the Patterson fire station and loaded tankers using LDH.

Firehouse Fill Site

Some of the tankers loaded using 3-inch hose, some were able to load using 5-inch LDH.

The Results

- The drill was stopped at the 2:00-hour mark.
- Water flow was only interrupted once for about 2 minutes around the 81-minute mark in the drill.
- An estimated 98,000 gallons of water were flowed through the attack pumper during the drill producing an average flow rate of 869 gpm.
- A peak flow of 1,310 gpm was achieved during the last 53-minutes of the drill.

The Lessons Learned

- At this drill, crews chose to use a nurse tanker operation from the very beginning.
- The nurse tanker operation provided time to get the first dump tank set up without having to worry about running out of water in a minute or two.
- The use of the engine/tanker concept (Engine 2-4 1500/2500) allowed the dump site engine to "nurse" while transitioning to a dump site operation.

The Lessons Learned

- As the flow increased, triple suction lines were used to improve intake so that the flow could increase without impacting jet siphon operations.
- The use of a large body pump powered by a big motor at the dump site allowed one rig to supply the entire operation; 1310 gpm flow plus 4 jet siphons!
- The use of a “single-lane” dump tank arrangement simulated real life roadway configurations - which was one of the primary goals of the drill.

The Lessons Learned

- The dump site was easily capable of supporting a flow greater than 1500 gpm.
- Water flow was interrupted when the firehouse fill site had to shut down due to a strainer becoming clogged. The loss of this fill site critically impacted the overall operation.
- The drill really was a good example of using a large, engine tanker as a dump site pumper. One pumper supported the entire dump site operation and did so with ease.

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, the tankers did not all have the same fill connection, thus some time was lost having to use different fittings.

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 Patterson Fire Department No. 1 for sponsoring and hosting the seminar.

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This program was developed by
GBW Associates, LLC

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