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Town of Waukesha Fire Department
Waukesha, Wisconsin

Rural Water Supply Operations Seminar
2-hr Water Supply Drill
October 27, 2019
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

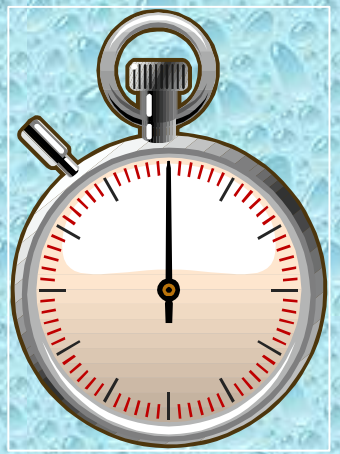
- The 2-day seminar started with a 4-hour classroom session to review the basics of rural water supply operations.
- The review session was held at the Town if Waukesha Fire Department.
- Once the classroom part was over, the seminar continued with 8 hours of practical work on fill-site and dump site operations.
- The program concluded with the 2-hr ISO tender shuttle exercise and program review.
- Seminar participants were from the Waukesha area.

The 2-hour Water Supply Drill

- The tender shuttle drill was held on October 27th at the Fox River Christian Church.
- 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 tender 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**
Town of Waukesha	Engine 1667	1500 gpm	1000 gal	NA
Town of Waukesha	Ladder 1671	1500 gpm	475 gal	NA
Town of Waukesha	Tender 1691	500 gpm	3500 gal	(2) 3500 gal
Town of Waukesha	Tender 1692	1000 gpm	3500 gal	(2) 3500 gal
Merton Community	Tender 4492	1500 gpm	3000 gal	3000 gal
Vernon	Tender 1292	NA	3300 gal	3000 gal
Wales Genesee	Tender 3791	1250 gpm	3000 gal	(2) 3000 gal
North Prairie	Tender 3591	1000 gpm	3000 gal	3000 gal
City of Waukesha	Engine 3	1500 gpm	750 gal	NA

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

The Drill Begins

The drill began with TWFD Ladder 1671 arriving on scene and working with TWFD Tender 1691 to get a dump site up before water flow had to start.

Dump Site Operations

The dump site crew decided to arrange dump tanks in front of the 1500 gpm quint simulating a “Single-Lane Tank” layout. The first dump tank used was one of two, 3500-gal dump tanks carried on the first-arriving tender.

Dump Site Operations

The second dump tank from the first-arriving tender was deployed soon thereafter and thus, a two-dump tank operation was quickly set up.

Dump Site Operations

To facilitate full-flow drafting with the dump tanks located in front of the quint, a Kochek suction elbow was used on the officer side suction inlet.

Dump Site Operations

At the 5:00-minute mark water flow was started at 250 gpm using Ladder 1671's tank water (475 gal). By the 7-minute mark the first dump tank was in operation.

Dump Site Operations

Around the 17-minute mark water flow was moved to 500 gpm and a three-dump tank operation was underway. All three dump tanks were 3500-gal in capacity.

Dump Site Operations

With two fill sites in use (a stream and a hydrant), tenders were directed to a specific site by the Water Supply Officer. Vernon Tender 1292 dumps a load of hydrant water here in this photo!

Dump Site Operations

At the 102-minute mark flow was moved to 800 gpm and then to 1000 gpm at the 106-minute mark.

Dump Site Operations

Because the suction strainer on the initial suction hose line was flow-limiting, the crews worked to build a second suction line using the quint's front intake.

Dump Site Operations

However, a mechanical issue arose with the front intake making it non-operational and thus it had to be capped in order to eliminate a large air leak.

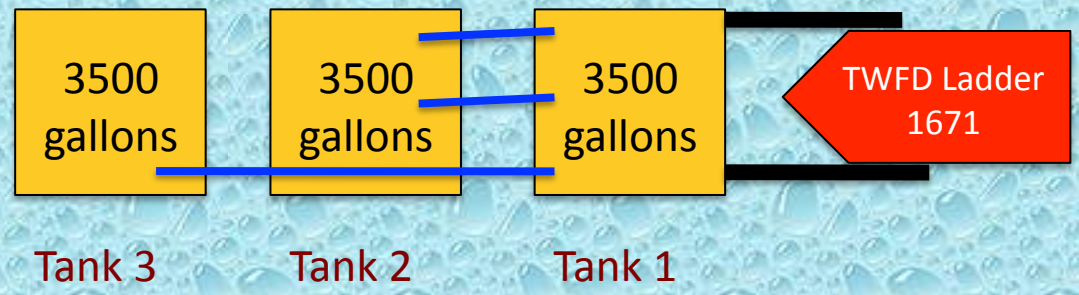
Dump Site Operations

Eventually, enough suction hose was located to build out a second suction line using the driver side suction inlet.

Dump Site Operations

With the second suction line now in operation the crew was able to flow 1,000 gpm and operate three jet siphons.

Dump Site Layout



Suction Hose

Jet Siphon

The Fill Sites

- For this drill – two fill sites were used – a fire hydrant and a stream.
- The fill sites both provided about a 3.0-mile round trip for the units hauling water.
- Both sites had ample water volume to support the drill and access was not a problem.
- A 1,500 gpm pumper was used at each site to support the tender fill station.

Stream Fill Site Operation

5-inch LDH was used at the stream fill site to load tenders. Loading operations were very efficient and tenders were quickly placed back on the road to the dump site.

The Results

- The drill was stopped at the 2:00-hour mark.
- Water flow was interrupted twice during the drill while operational changes were made at the dump site.
- An estimated 86,500 gallons of water were flowed through the quint during the drill producing an average flow rate of 801 gpm.
- A peak flow of 1,000 gpm was achieved during the last 14-minutes of the drill.

The Lessons Learned

- At this drill, crews chose to go right to a dump tank operation from the very start.
- The dump site pumper (quint) had only a 475-gallon water tank so he changeover to dump tank operations had to occur rather quickly.
- Many of the tenders carried twin dump tanks which allowed for the rapid deployment of multiple dump tanks.

The Lessons Learned

- As the flow increased, a second suction line was needed at the quint so that the unit could support the fire flow and supply multiple jet siphons.
- The use of a suction elbow and additional suction hose allowed both suction lines to be connected to the quint's side suction inlets thus avoiding the front suction limitation.

The Lessons Learned

- A tender fill-site needs to run like a NASCAR pit stop. Anything that slows down the loading of tenders is going to reduce the efficiency of the tender shuttle.
- At this drill, most all of the tenders had the same fill connection which allowed the rigs to get filled and be back on the road in little 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 tender – as well as adaptors.
- The "bundling" of water hauling mutual aid resources has proven successful in many drills. The tender 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 Town of Waukesha Fire Department for sponsoring and hosting this seminar.

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This program was developed by
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