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Town of Linn Fire Department
Linn, Wisconsin

Rural Water Supply Operations Seminar
2-hr Water Supply Drill
May 1, 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 mutual aid companies to work together in a real-life training situation.

The Seminar

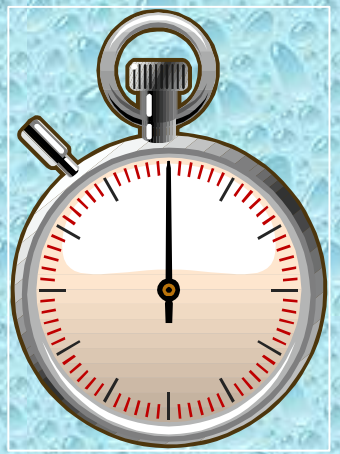
- The 2-day seminar started with a 4-hour classroom session to review the basics of rural water supply operations.
- The review session was held at the Linn fire station.
- Once the classroom part was done, the seminar continued with 8 hours of practical work on fill-site and dump site operations.
-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

The 2-hour Water Supply Drill

- The tender shuttle drill was held in the rear parking lot at the Linn fire station on May 1st.
- 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 nine different fire departments in the Walworth 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 Linn area.*

Drill Participants

- Linn Engine 3321
  - 2,000 gpm pump w/1,800 gal tank
- Linn Engine 3322
  - 2,000 gpm pump w/1,000 gal tank

Drill Participants

- Linn Tender 3331
  - 4,000 gal tank
- Linn Fireboat 3370
  - 2,000 gpm pump

Drill Participants

- Turtle Tender 53
  - 2,000 gal tank

- Walworth Tender 3836
  - 1,000 gpm pump w/2,000 gal tank

Drill Participants

- Lyons Tender 2938
  - 2,000 gal tank

- Whitewater Tender 1230
  - 500 gpm pump w/4,100 gal tank

Drill Participants

- Hebron Tender 871
  - 250 gpm pump w/3,500 gal tank
- Fireovac Tender
  - 1,000 gpm pump w/3,000 gal tank

Preparation

Units staged off-site however they first assembled at the fire station where they received drill assignments and a safety briefing.

The Drill Begins

Linn Engine 3321 and Tender 3331 were the first units to arrive on the scene. The timer was started when the engine came to a complete stop. The crew quickly went to work deploying an initial attack line and preparing for dump tank operations.

Dump Site Operations

The decision was made to go immediately to a dump tank operation and forego any type of nurse tender operation. Thus, the crews had to work quickly and efficiently.

Dump Site Operations

The first dump tank (4,000 gallons) was deployed in less than three minutes – it came on Tender 3331.

Dump Site Operations

A TFT low level strainer was used for drafting. This all had to be set up in preparation for flowing water at the 5:00 minute mark.

Water Flow Started

Water flow was started at 250 gpm at the 5-minute using a 2-1/2-inch attack line manned by one person.

Dump Site Operations

Shortly after the 5-minute mark was reached, water was dumped into the first dump tank and drafting operations commenced.

Dump Site Operations

Lyons Tender 2938 (2,000 gal) was the third tender to arrive. By then, a second dump tank was down and ready for water.

Dump Site Operations

By the 13-minute mark, two dump tanks were in operation and preparation was underway to move the flow to 500 gpm.

Flow Moves to 500 gpm

At the 15-minute mark, flow was moved to 500 gpm using a flow diffuser device supplied by a 5-inch line from Engine 3321.

Dump Site Operations

Tenders were grouped into “task forces” and were dispatched accordingly.

Dump Site Operations

At the 45-minute mark, the 500 gpm flow was moved to a TFT Blitzfire device instead of the flow diffuser. The diffuser was being supplied by Engine 3321's high-flow discharge and the discharge pressure was a problem due to the size of the diffuser.

Dump Site Operations

The primary dump tank was a 4,000-gallon tank from the Linn tender. The large tank created a huge reservoir from which the dump site engine could work.

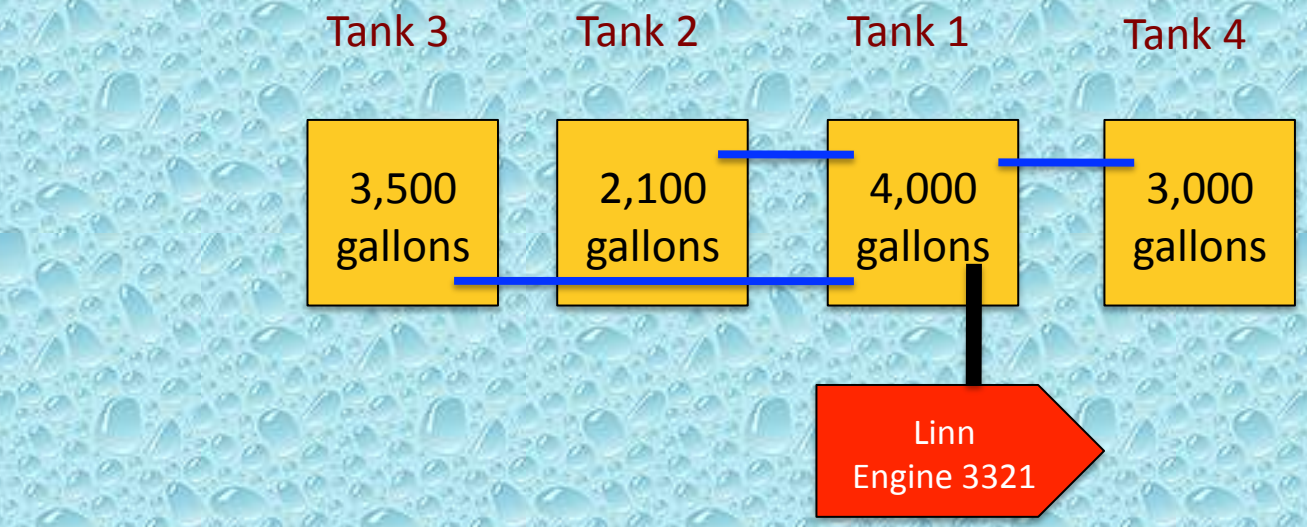
Dump Site Operations

Around the 1-hour mark, a fourth dump tank was placed in-service and flow was moved to 1,250 gpm using Engine 3321's pre-piped deck gun. A Firovac low level strainer was used as the jet siphon in the fourth tank.

Dump Site Operations

In the end, four dump tanks and two fill sites were used to support the 1,250 gpm flow.

Dump Site Layout



The Fill Sites

- For this drill – two fill sites were used. Both site used public boat launch areas along the southern shore of Lake Geneva.
- The first fill site set up was located at the boat launch on Hillside Road and provided about a 2.0-mile round trip for the units hauling water.
- The lake provided ample water volume to support the drill and access was not a problem.
- A single, 2,000 gpm pumper was used at the lake to support the tender fill station.

The Fill Sites

- The second fill site was located on Linn Road at another boat launch area on Lake Geneva.
- The site provided a 4.8-mile round trip for the units hauling water.
- The site used a large lake that provided ample water volume to support the drill and access was not a problem.
- A 2,000 gpm fire boat was used to support the tender fill station.

Hillside Road Fill Site

The lake had limited access but plenty of water to support a large scale loading operation. Linn Engine 3322 (2,000 gpm) is shown here arriving and getting set up as the fill site pumper. Because of the wave action on the lake, the float was removed from the strainer and the strainer was then submersed.

Hillside Road Fill Site

The Firovac vacuum tender also used this fill site to load. The vacuum tender's suction hose is seen on the right side of the photo. The vacuum tender self-loaded – there was no need for the engine or its crew to be involved in that loading process.

Hillside Road Fill Site

A suction intake valve problem forced the engine crew to move to using the pumper's front suction inlet. They still used the barrel strainer on the suction hose.

Hillside Road Fill Site

Tenders were loaded using 5-inch LDH. Engine 3322 drafted and pumped to an LDH manifold which was then used to control the loading of the tenders. The goal was to load at a rate of 1,000 gpm or more.

Hillside Road Fill Site

All of the tenders in the drill were able to load using 5-inch LDH: which played a huge role in the success of the operation.

Hillside Road Fill Site

Even though the fill site area was a bit cramped, tender drivers and fill site crews did a very good job of “traffic control” and getting tenders in, loaded, and out again in very short order.

Hillside Road Fill Site

The vacuum tender needed no help in terms of loading. Once the crew deployed its suction hose and floating strainer, all they had to do was pull up to the water's edge, connect the suction hose, and load. This proved to be a very efficient process in terms of people and time.

Hillside Road Fill Site

The vacuum tender (3,000 gal) is shown here self-loading while Engine 3322 awaits the arrival of a traditional tender at the fill site.

Linn Road Fill Site

Linn Fireboat 3370 (2,000 gpm) ran quite an impressive fill site. They were in position and set up very quickly and loaded tenders at 1,000+ gpm – using a couple hundred feet of 5-inch LDH and two people.

Linn Road Fill Site

The Linn Road boat launch area had plenty of room for tender access and maneuvering.

Linn Road Fill Site

As in our other water supply drills in Wisconsin, the use of 5-inch LDH and standard fill connections made a huge difference at this drill in the ability to get the tenders loaded fast and back on the road.

The Results

- The drill was stopped at the 2:00-hour mark.
- Water flow was interrupted only once during the entire drill – for about 20 seconds due to a transfer issue.
- An estimated 97,000 gallons of water were flowed through the attack engine during the drill producing an average flow rate of 847 gpm.
- Water flow peaked at 1,250 gpm for most of the second hour of the drill.

The Lessons Learned

- At this drill, a nurse tender operation was not used which meant that the crews had to work very quickly to get that first dump tank set up and placed in operation.
- The 2,000 gpm dump site engine had plenty of capability to support the 1,250 gpm flow and run three jet siphons. The single, 6-inch suction intake that was used became the limiting factor.
- An additional suction inlet line would have been needed if a flow increase was requested by command.

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, all tenders were equipped with 5-inch Storz fill connections. Having a standardized fill connection for all tenders increases fill efficiency and decreases fill time.

The Lessons Learned

- The vacuum tender proved to be quite efficient in terms of hauling water, all because of the simplicity and efficiency in loading.
- The fireboat played a huge role in loading tenders. On a lake such as Lake Geneva where vehicle access is limited and the structure fire threat great, the large capacity fireboat is a formidable weapon for both fire attack and water supply operations.

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 Linn FD for sponsoring and hosting this seminar.

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For more information contact us at
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