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Rapids City Fire Protection District
Port Byron, Illinois

Rural Water Supply Operations Seminar
2-hr Water Supply Drill
March 30, 2014
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

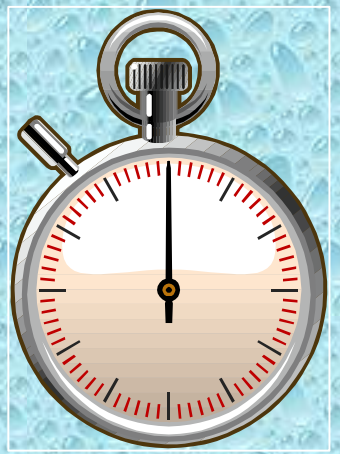
- The 2-day seminar started on Saturday with a 4-hour classroom session to review the basics of rural water supply operations.
- The review session was held at the Port Byron Fire Department.
- Once the classroom part was done, the seminar continued with several hours of practical work on fill-site and dump site operations.
- The program concluded on Sunday with the 2-hr ISO tanker shuttle exercise and program review.
- Seminar participants were from the Port Byron area.

The 2-hour Water Supply Drill

- The tanker shuttle drill was held on March 30th at a nearby paint factory along the Mississippi River.
- 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 eleven 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 the Port Byron area.*

Drill Participants

- Port Byron Engine PB3
  - 1,500 gpm pump w/1,000 gal tank
- Port Byron Engine PB4
  - 1,250 gpm pump w/1,500 gal tank

Drill Participants

- Port Byron Tender PB5
  - 750 gpm pump w/3,000 gal tank

- Hillsdale Engine 6
  - 500 gpm pump w/250 gal tank

Drill Participants

- Hillsdale Tender 2
  - 750 gpm pump w/1,000 gal tank

- Hillsdale Tender 3
  - 250 gpm pump w/3,000 gal tank

Drill Participants

- Cordova Tender 1102
  - 1,000 gpm pump w/3,250 gal tank

- Dewitt Tender 1706
  - 500 gpm w/3,000 gal tank

Drill Participants

- Alexis Demo Tanker
  - 750 gpm pump w/3,000 gal tank
- LeClaire Truck 1
  - 2,000 gpm pump w/250 gal tank

Preparation

Units staged in the parking lot at the public boat launch along the Mississippi River across the street from the Port Byron fire station.

The Target Hazard

A paint manufacturing facility in Port Byron was used as the “target hazard” for the drill.

The Drill Begins

Port Byron PB3 arrives on the scene and crews go to work setting up as the dump site engine.

Attack Pumper Operations

One crew member stretches a 2-1/2” attack line while others get ready for dump tank operations.

Dump Site Operations

The first dump used was a 2,000-gallon rectangular style tank provided by Fol-Da-Tank Co. The tank was the new, Single Lane Tank design.

Dump Site Operations

The dump site crew did a really great job of getting the first dump tank set up in under 3-minutes – all they needed was a tender to arrive.

Dump Site Operations

Port Byron's (PB5) 3,000-gallon tender was next to arrive and off-loaded its water.

Dump Site Operations

At around the 5-minute mark, water flow was started at 250 gpm using a 2-1/2" attack line.

Dump Site Operations

By the 6-minute mark, the operation had expanded significantly to include a second, 2000-gallon SLT. In addition, LeClaire Truck 1 arrived and took a position to flow its elevated master stream device.

Dump Site Operations

One of the critical points in the drill was the ability to transfer water to the primary dump tank. The crew is shown building a jet siphon transfer system.

Dump Site Operations

Hillsdale Tender 3 offloads its 3,250 gallons at around the 6:40-minute mark and the operation moves to drafting from the dump tanks.

Dump Site Operations

Two dump tanks are now in operation – although the smaller capacity dump tanks are proving a bit problematic in that the large tenders cannot drop their entire load into one tank.

Dump Site Operations

Flow was moved to 585 gpm using LeClaire's elevated master stream which was equipped with a flowmeter.

Dump Site Operations

Hillsdale Tender 2 (1,000 gal) was the last tender to arrive and offloaded its water at the 22-minute mark.

Dump Site Operations

Water flow was interrupted around the 24-minute mark when some issues occurred transferring water. In reality, the single-fill site could not support the 585 gpm flow at the dump site.

Dump Site Operations

A third dump tank was placed into operation (3,500 gal) which helped with getting more water in storage on site – but it was bigger that the primary drafting tank so water transfer ability became critical.

Water Transfer Operations

An attic ladder was used to span the two dump tanks – which provided more space for tenders to dump simultaneously.

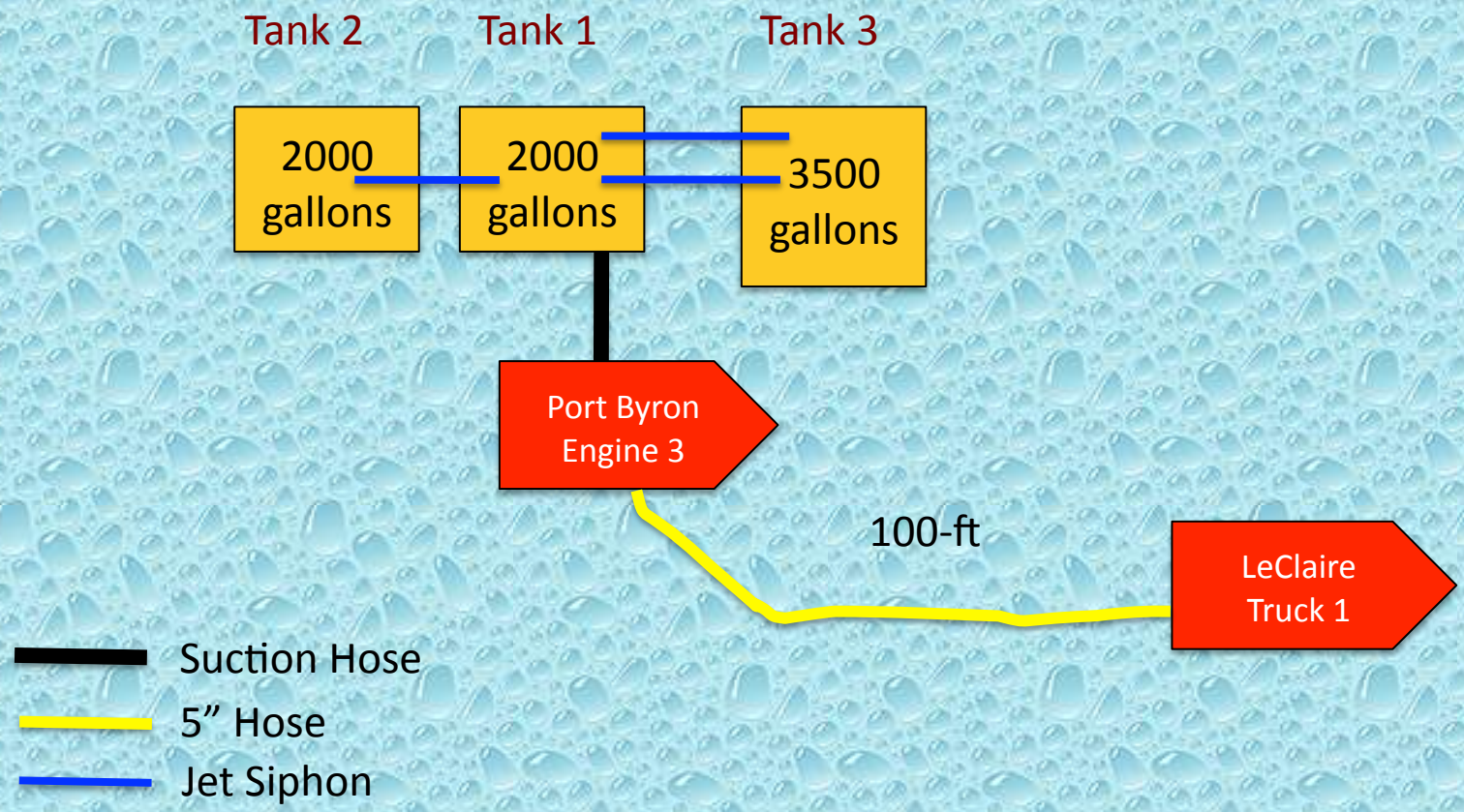
Water Transfer Operations

Great looking flow from this jet siphon water transfer system. This is what a jet siphon discharge stream should look like!

Dump Site Operations

Port Byyron PB5 returns to the dump site with its first load of water from the fill site.

Dump Site Layout



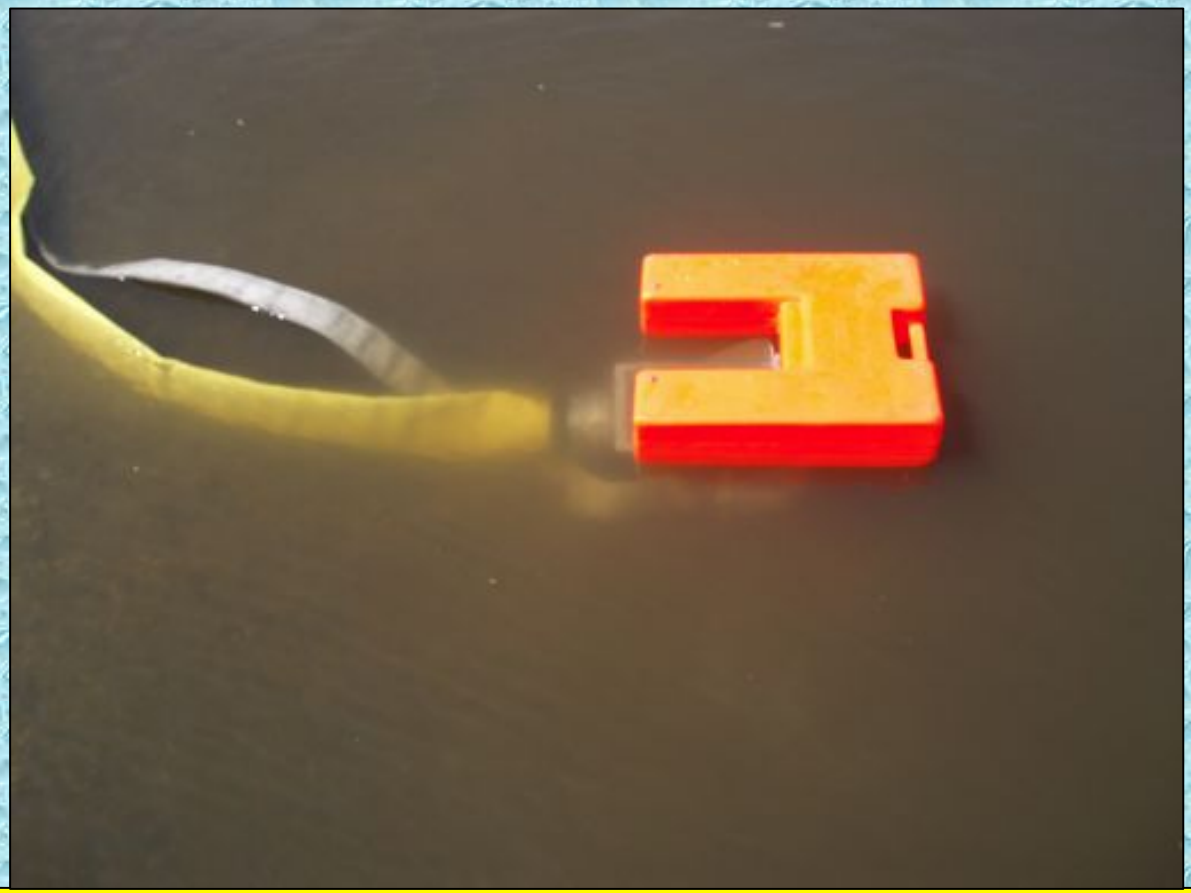
The Fill Sites

- For this drill – one fill site was used.
- The lone fill site was located at a public boat launch in Rapids City along the Mississippi River.
- The fill site provided a 4.0-mile roundtrip for units hauling water and had ample water supply to support the water shuttle exercise.
- A single, 1,250 gpm pumper was used at the boat launch to support the tender fill station.
- The pumper used Fol-Da-Tank Company's new floating eductor to provide water for filling tenders.

Fill Site Operations

Port Byron PB4 (1,250 gpm) took position at the top of the boat launch and deployed the floating eductor which was fed by2-1/2” hose and supplied water back to a dump tank using 5-inch hose.

Fill Site Operations



The Fol-Da-Tank floating eductor was on loan to Port Byron for the drill. The eductor uses the simple venturi principle to supply water.

Fill Site Operations

The eductor was fed from this 1,250 gpm pumper. The eductor then supplied water into the dump tank – from which the pumper then drafted and filled tenders with a target fill rate of 1,000 gpm./

Fill Site Operations

A 4,000-gallon dump tank was used as the collection reservoir for the water supplied by the floating eductor.

Fill Site Operations

Tenders were then filled using 2-1/2” hose. The fill operation was unable to support a 1,000 gpm fill rate – partly because of the water needed to make the eductor work and partly because of the smaller hose lines used to load the tenders.

The Results

- The drill was stopped at the 1:50-hour mark.
- Water flow was interrupted a number of times during the drill.
- An estimated 46,520 gallons of water were flowed through the attack engine during the drill producing an average flow rate of 461 gpm.

The Lessons Learned

- At this drill, the first dump tanks were set up very quickly – before the 5:00-minute mark and no nurse tender operation was used.
- One of the problems encountered was the use of the 2,000-gallon dump tanks because almost all of the tenders carried more water than what those dump tanks could hold. That resulted in tenders waiting to dump – which caused a backlog.
- Had the first dump tank used been a larger 3,000 or 3,500-gallon model, the first tenders would have been on the road sooner to the fill site.

The Lessons Learned

- A tender 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, valuable time was lost making and breaking threaded connections at the fill site. If 2-1/2" hose is going to be used – then consider the use of camlock style fittings for faster connection time.
- In addition, the use of large diameter hose almost always speeds up the loading process.

The Lessons Learned

- The use of the floating eductor provided an interesting water supply set-up using an open relay operation.
- The problem was that there was only one fill site and the flow of the eductor could not support the long line of tenders. Some tenders spent up to 7 minutes waiting in line just to get connected.
- A second fill site was needed.

The Lessons Learned

- In a real life event, it would be best to place the fill site pumper down at the river's edge and draft using dual suctions.
- The floating eductor (and Turbo Draft) are really made for water supply situations where vehicle access is impeded.

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.
- 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.

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 Rapids City Fire Protection District for sponsoring and hosting this seminar.

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This program was developed by
GBW Associates, LLC

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