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Jefferson County Firefighters Association
Whitewater, Wisconsin

Rural Water Supply Operations Seminar
2-hr Water Supply Drill
April 6, 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

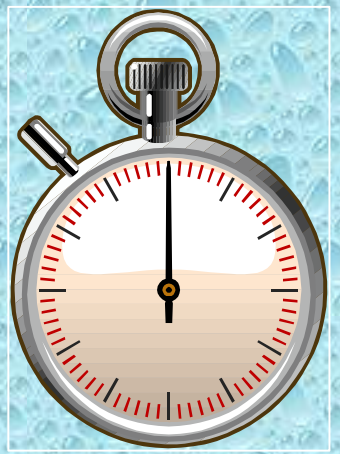
- The 2-day seminar started on Saturday with a 4-hour classroom session to review the basics of rural water supply operations.
- The review session was held at the Whitewater Fire Department.
- Once the classroom part was done, the seminar continued with several hours of practical work on fill-site and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

The 2-hour Water Supply Drill

- The tanker shuttle drill was held on April 6th at a bus dealership on the outskirts of Whitewater.
- 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 fourteen 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 Jefferson County area.*

Drill Participants

- Whitewater Engine 1220
  - 2,000 gpm pump w/1,000 gal tank

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

Drill Participants

- Johnson Creek Tender 26
  - 500 gpm pump w/3,000 gal tank
- LaGrange Tender 1430
  - 1,000 gpm pump w/3,000 gal tank

Drill Participants

- Helenville Tender 53
  - 500 gpm pump w/3,600 gal tank

- Fort Atkinson Tender 112
  - 400 gpm pump w/3,600 gal tank

Drill Participants

- Ixonia Tender 7
  - 1,500 gpm pump w/3,500 gal tank
- Sullivan Tender 3
  - No pump w/2,500 gal tank

Drill Participants

- Jefferson Tender 11
  - No pump w/2,000 gal tank
- Troy Center Tender 1530
  - 350 gpm pump w/3,600 gal tank

Drill Participants

- Turtle Engine 51
  - 2,000 gpm pump w/1,000 gal tank
- Cambridge Engine 2
  - 1,500 gpm pump w/2,000 gal tank

Drill Participants

- Delavan Engine 2
  - 2,000 gpm pump w/1,000 gal tank
- Waterloo Tender 5
  - 500 gpm pump w/4,000 gal tank

The Drill Begins

With all units staged at a nearby parking lot, the drill was started. Units were dispatched using a MABAS run card and dispatcher. The timer was started once Whitewater Engine 1220 arrived on the scene.

The Drill Begins

Command was established and crews began working to deploy an attack line and set up for dump tank operations. Whitewater Tender 1230 was the next unit to arrive on the scene bringing with it 4,100 gallons of water and two dump tanks.

Dump Site Operations

The decision was made to operate without a nurse tender, therefore crews had to hustle to get that first dump tank (3,500 gallons) set up.

Dump Site Operations

The dump site crew did an awesome job and dump site operations were underway at the 6:33 minute mark. A 250 gpm water flow had already started at the 5:00 minute using a portable ground monitor device.

Dump Site Operations

A second dump tank was deployed around the 7:00 minute mark in preparation for rapidly expanding the water flow.

Dump Site Operations

As additional tenders arrived on the 1st Alarm, crews grabbed more dump tanks. The operation would eventually grow to a 5-dump tank operation.

Dump Site Operations

Troy Center Tender 1530 is seen dumping its water here at the 12:00 minute mark.

Dump Site Operations

A 5-inch line was deployed to a hose diffuser device so that flow could be increased when the 15-minute mark was reached. The line was connected to the 2,000 gpm pumper's high-flow discharge.

Dump Site Operations

At the 14-minute mark , three dump tanks were down and two were in operation.

Dump Site Operations

At the 15-minute mark, water flow was moved to 500 gpm using the flow diffuser device with built in pitot tube for flow measurement.

Dump Site Operations

Just a few minutes later (17-minute mark) flow was increased again to 750 gpm and a third dump tank was placed in operation.

Dump Site Operations

Four dump tanks are now deployed around the 22-minute mark and three are in operation. Additional alarms are struck bringing more tenders.

Dump Site Operations

At the 24-minute mark, water flow was moved to 1,100 gpm because tenders were lined up to dump and the dump tanks were full!

Dump Site Operations

What made the drill such a success was the ability to reload the tenders. All of the tenders in the mutual aid system are equipped with a 5-inch LDH direct fill line which meant the rigs were filled at a rate of 1,000 gpm or greater.

Dump Site Operations

One of problems that arose was the inability to “get water into the pumper.” The pumper was drafting from both the driver side and front intakes using 6-inch suction hose. The problem was the low level strainer selection. The strainer on the front intake suction line (left) was exchanged for a better performing strainer (right).

Dump Site Operations

This changeover occurred about 56-minutes into the drill. The strainer on the driver side suction line was also changed out for a better performing one. Once this was done, water flow was increased to 1,300 gpm and then finally to 1,750 gpm about 14 minutes later - where it was sustained for the remainder of the drill.

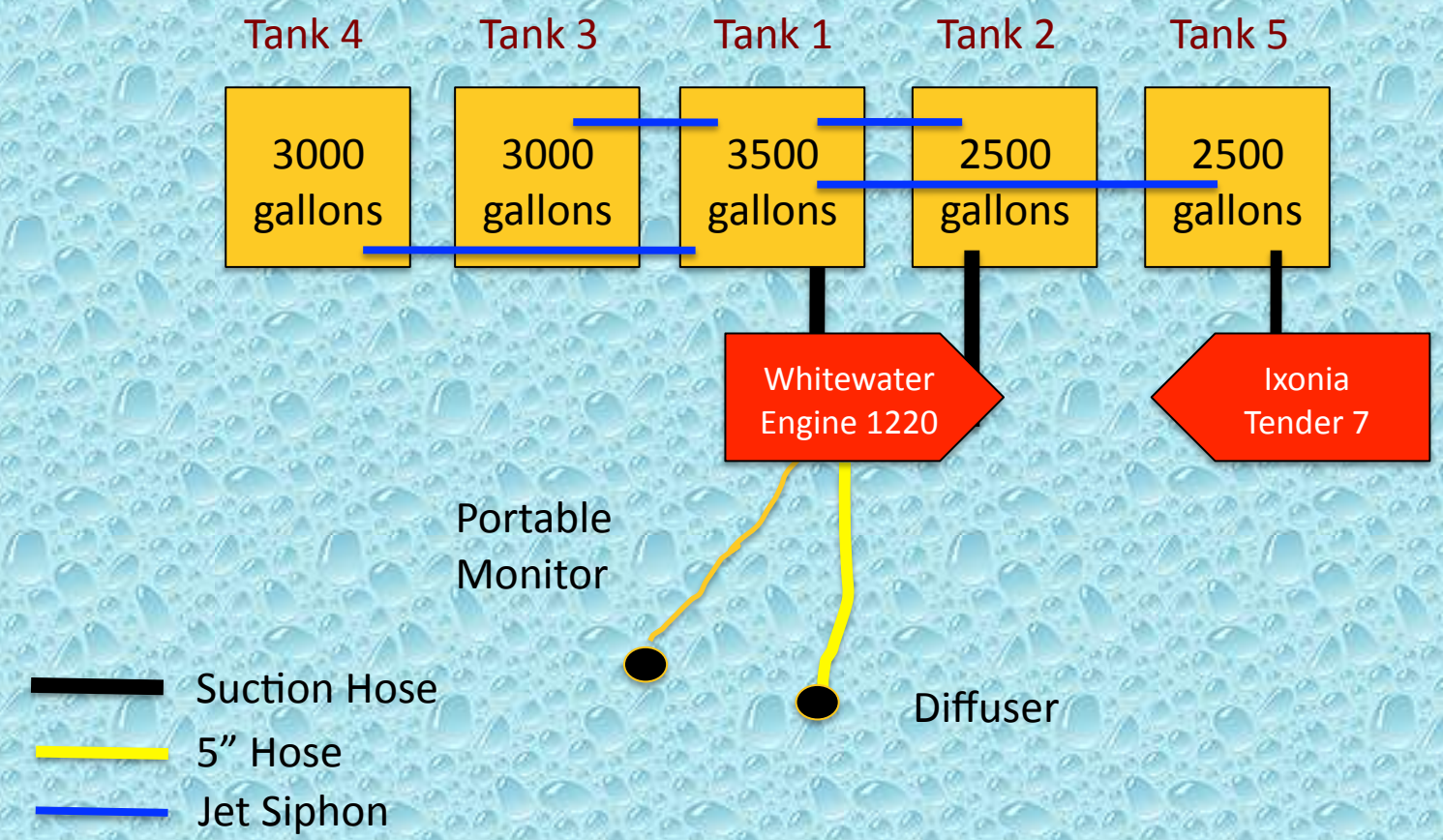
Dump Site Operations

This photo (67-minute mark) shows the complexity of the dump site operation. Ixonia Tender 7 was brought in to help transfer water since the Whitewater pumper was flowing over 2,000 gpm - given the multiple jet siphons in use.

Dump Site Operations

With the flow now at 1,750 gpm, this photo at the 85-minute mark shows a single tender at the dump site – which was the norm for the remainder of the drill.

Dump Site Layout



The Fill Sites

- For this drill – three fill sites were used – two lakes and one stream.
- The first fill site was located at a boat ramp at Tripp Lake and provided a 2.4-mile round trip for 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 boat ramp to support the tender fill station.

The Fill Sites

- The second fill site was located at the Old Paper Mill Dam and also provided a 2.4-mile round trip for units hauling water.
- The site provided ample water volume to support the drill and access was not a problem.
- A single, 1,500 gpm pumper was used at the boat ramp to support the tender fill station.

The Fill Sites

- The third fill site was located at a creek on Franklin Street and provided a 5.8-mile round trip.
- The site provided ample water volume to support the drill and access was not a problem.
- A single, 2,000 gpm pumper was used at the boat ramp to support the tender fill station.

Franklin Street Fill Site

Turtle FD Engine 51 with a crew of three personnel operated this fill site. The 2,000 gpm pumper drafted from the creek and supplied a 5-inch line for the loading operation.

Franklin Street Fill Site

A 5-way LDH manifold was used as the loading control device. One person manned the valve and one person made the connection to the tenders. This was a very efficient set-up and most tenders were filled at a rate approaching 1,500 gpm.

Tripp Lake Fill Site

Delavan Engine 2 (2,000 gpm) operated this fill site. The crew is seen here during the initial set up of the site. This site was the first fill site established – so the crew had to work quickly in order to be ready for the first empty tender.

Tripp Lake Fill Site

A barrel strainer and 6-inch suction hose was used to supply this operation. A roof ladder was used to keep the strainer off of the bottom of the lake.

Tripp Lake Fill Site

The fill site operation initially used a single, 5-inch line to a manifold as the loading station supply.

Tripp Lake Fill Site

After the site was operational and a few tenders had been loaded, the crew went to work expanding the operation by adding a second suction line – the front intake.

Tripp Lake Fill Site

With the 2,000 gpm pumper now capable of maximum capacity, the crew set up a second loading operation so that two tenders could be loaded at the same time at a rate of 1,000 gpm each.

Paper Mill Dam Fill Site

The third fill site used a combination of a portable pump and a Turbo Draft to to supply water to portable dump tanks from which Cambridge FD Engine 2 (1,500 gpm) drafted and loaded tenders.

Paper Mill Dam Fill Site

The “open relay” concept is a useful one when pumpers cannot get close to a reliable static water source. The portable pump and Turbo Draft fed the dump tanks and then the pumper drafts from the dump tanks and loads tenders at 1,000 gpm.

Paper Mill Dam Fill Site

Because of the 1,750 gpm water flow back at the dump site, two dump tanks were used at this fill site in order to load tenders as fast a possible.

Paper Mill Dam Fill Site

By using two dump tanks, sufficient capacity was available to fill the large tenders when they arrived. During the period in between tenders – the dump tanks would refill.

Paper Mill Dam Fill Site

Ample space existed to run the supply set-up and the loading set-up. The use of 5-inch LDH made a big difference in being able to quickly load the tenders.

The Results

- The drill was stopped at the 2:00-hour mark.
- Water flow was never interrupted!
- An estimated 148,100 gallons of water were flowed through the attack engine during the drill producing an average flow rate of 1,288 gpm.

The Lessons Learned

- At this drill, the dump site was set-up very quickly and a nurse tender operation was never used.
- The use of the 2,000 gpm pumper at the dump site made a big difference in being able to support the higher flows later in the drill.
- The school bus facility provided ample space for this large operation and traffic flow was not a problem.

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, every tender loaded using a 5-inch LDH fill line. This "standardization" was key to the success of the operation as was the ability to fill the tenders at rates over 1,000 gpm.

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.

The Lessons Learned

- Low level suction strainers truly vary in their flow capability – and this is often only realized when attempting maximum flows.
- At this drill, crews had to change out two low level strainers to ones that had higher flows.

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 Jefferson County Firefighters Association and the Whitewater FD for sponsoring and hosting this seminar.

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This program was developed by
GBW Associates, LLC

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