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Floyd Fire Department
Floyd, Iowa

Rural Water Supply Operations Seminar
2-hr Water Supply Drill
August 1, 2021
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

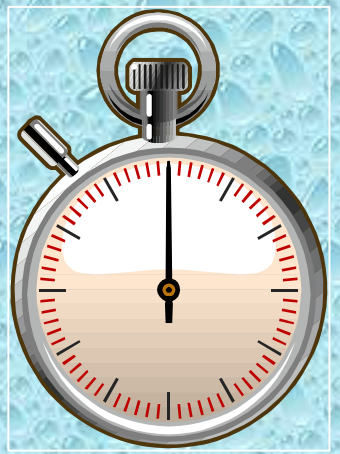
- The 2-day seminar started with a 4-hour classroom session to review the basics of rural water supply operations.
- The review session was held at the Floyd FD.
- Once the classroom part was over, the seminar continued with 8 hours of practical work on fill-site and dump site operations.
- The program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

The 2-hour Water Supply Drill

- The tanker shuttle drill was held on August 1st at a farm outside of Floyd.
- 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**
Floyd	Engine 851	1500 gpm	500 gal	2500 gal
Floyd	Tanker 862	1250 gpm	3600 gal	3500 gal
Colwell	Engine 954	1250 gpm	900 gal	NA
Colwell	Tanker 952	250 gpm	2000 gal	2000 gal
Charles City	Tanker 261	NA	2000 gal	2100 gal
Nora Springs	Engine 451	1500 gpm	1500 gal	NA
Nora Springs	Tanker 464	UNK	2000 gal	3000/2500 gal
Ionia	Tanker 941	500 gpm	3000 gal	3000 gal
Alta Vista	Tanker 731	NA	3000 gal	2500 gal
Nashua	Tanker 441	500 gpm	3000gal	3000 gal

- *The participants for the drill were from several different fire departments in the Floyd 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 Floyd area.*

The Drill Begins

The drill began with Nora Springs Engine 451 arriving on scene and going to work setting up as the attack pumper with plans to transition to dump tank operations.

Dump Site Operations

Engine 451 (1500 gpm/1500 gal) operated as both the attack engine and dump site engine. Crews are seen here getting the first dump tank down.

Dump Site Operations

Floyd Tanker 862 (1500 gpm/3600 gal) was the first-arriving tanker and the crew quickly deployed its dump tank (3500 gal).

Dump Site Operations

The folks decided to do a “through the drain sleeve” maneuver so that they could eliminate a possible air bubble in the suction hose which might have occurred had they gone over top the dump tank rail.

Dump Site Operations

At the 8-minute mark, water flow was started at 250 gpm using a 2-1/2-inch attack line.

Dump Site Operations

While dump operations were being set up, Tanker 862 operated as a nurse tanker and supplied water to Engine 451 by pumping into an LDH manifold. The nurse tanker mode provided a nice buffer of time to set up the first dump tank.

Dump Site Operations

By the 15-minute mark, dump tank operations were underway with one dump tank in operation and the flow moved to 500 gpm using Engine 451's deck gun.

Dump Site Operations

The crews chose to set up dump tanks to the rear of Engine 451 and use a "single-lane" arrangement. A 90-degree suction elbow was used to accommodate the arrangement.

Dump Site Operations

Additional tankers were dispatched using a “tanker task force” format. Rear-dumping only tankers were positioned so as not to block out the tankers that could side dump.

Dump Site Operations

Floyd Fire Chief Ben Chatfield (left) served as the Water Supply Group Supervisor and worked to keep the dump site running uninterrupted.

Dump Site Operations

By the 35-minute mark, two dump tanks were in operation and were supported by tankers hauling water from two fill sites.

Dump Site Operations

Fancy weights were used to keep the lightweight, low-level suction strainer in place; sometimes these lightweight strainers want to flip over.

Dump Site Operations

Around the 68-minute mark, the flow was moved to 800 gpm and three dump tanks were in operation.

Dump Site Operations

Water transfer operations became very important as the fire flow increased. A second suction line was put into operation using Engine 451's rear intake. Getting additional water into the engine allowed the unit to run all the jet siphons.

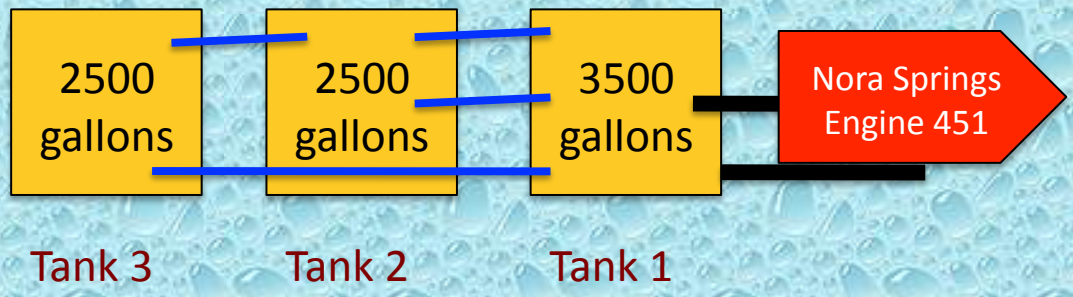
Dump Site Operations

At the 83-minute mark, the crew switched out the strainer on the the main suction line from a restrictive, low-level strainer to a full-flow barrel strainer.

Dump Site Operations

With the barrel strainer now in place, flow was moved to 1000 gpm at the 89-minute mark where it was maintained uninterrupted for the remainder of the drill.

Dump Site Layout



Suction Hose

Jet Siphon

The Fill Sites

- For this drill – two fill sites were used; they were two different streams.
- The fill sites both provided about a 4.0-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 1500 gpm and a 1250 gpm pumper were used at the fill sites.

Fill Site #1 Operation

The first fill site used a 5-inch LDH appliance fed by about 400-ft of 5-inch hose to load tankers.

Fill Site #1 Operation

Floyd Engine 851 (1500 gpm) drafts from a large creek and supplies the LDH appliance for loading tankers.

Fill Site #2 Operation

A 400 gpm portable pump was used to supply water from the creek to the dump tank. Colwell Engine 954 (1250 gpm) then drafted from the dump tank (open-relay) and loaded tankers.

Fill Site Operation

A TurboDraft device was also used to support the open-relay set-up. The device was supplied by Engine 954 when the pumper was not loading tankers.

Fill Site Operation

Colwell Engine 954 then supplied an LDH appliance which was used to load the tankers.

The Results

- The drill was stopped at the 2:00-hour mark.
- Water flow was never interrupted!
- An estimated 76,000 gallons of water were flowed through Engine 451 during the drill producing an average flow rate of 679 gpm.
- A peak flow of 1,000 gpm was achieved during the last 31-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.
- Rear-dumping only tankers were assigned a designate dumping area in an effort to not block out side dumping tankers.

The Lessons Learned

- As the flow increased, a second suction line was used to improve intake so that the flow could increase without impacting jet siphon operations.
- The use of a suction elbow and the through-the-drain set-up allowed the dump tanks to be arranged in a single-lane configuration.

The Lessons Learned

- A tanker 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 tankers 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 Floyd Fire Department for sponsoring and hosting this seminar.

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This program was developed by
GBW Associates, LLC

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