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Johnson County Mutual Aid Association  
Johnson County, Iowa

Rural Water Supply Operations Seminar  
2-hr Water Supply Drill  
April 22, 2018  
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 Jefferson-Monroe FD.
- 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 tanker shuttle exercise and program review.
- Seminar participants were from Johnson County and the surrounding area.

# The 2-hour Water Supply Drill

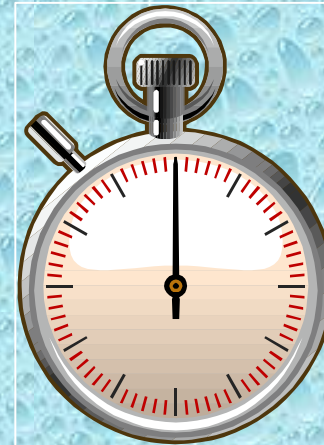
- The tanker shuttle drill was held on April 22<sup>nd</sup> in Solon, Iowa at Lake McBride Park.
- The drill attempted to replicate the 2-hour Water Supply Delivery Test used by ISO in their evaluation of fire department water supply capabilities.
- While ISO no longer uses the physical demonstration 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 tanker 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



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

# Drill Participants

- Jefferson-Monroe Engine 141
  - 1,250 gpm pump w/1,000 gal tank
- Jefferson-Monroe Tanker 143
  - 1,250 gpm pump w/3,000 gal tank





# Drill Participants

- Solon Engine 132
  - 1,250 gpm pump w/1,000 gal tank
- Solon Tanker 136
  - 1,250 gpm pump w/2,000 gal tank



# Drill Participants

- North Liberty Engine 117
  - 1,000 gpm pump  
w/1,000 gal tank
- North Liberty Tanker 113
  - 2,000 gpm pump  
w/2,500 gal tank





# Drill Participants

- Coralville Engine 72
  - 1,000 gpm pump w/1,000 gal tank
- Fairfax Tanker
  - 1,000 gpm pump w/2,000 gal tank



# Drill Participants

- Mt Vernon Tanker
  - Unknown pump w/2,250 gal tank
- Tiffin Tanker
  - Unknown pump w/2,000 gal tank





# The Drill Begins



Solon Engine 132 was the first unit to arrive followed closely by Solon Tanker 136. The engine laid out 200-feet of 5-inch LDH supply line and the tanker set up to establish a nurse tanker operation using a 5-inch clappered siamese. The timer was started when Engine 132's operator applied the parking brake.

# Dump Site Operations



Jefferson-Monroe Engine 142 was the next unit to arrive and the four-person crew went to work setting up a dump site while the tanker continued the nurse tanker set up.



# Dump Site Operations



Water flow was started at the 5-minute using an Elkhart RAM monitor. Flow was started at 250 gpm.



# Dump Site Operations



Getting the kinks out! Kinks in any supply line can really reduce the flow, thus it was very important for the crew to get the kinks out before the operation got fully underway.



# Dump Site Operations



The supply line feeding the attack engine (E132) was outfitted with a Task Force Tips clappered siamese. Once the dump tank operation was ready, the supply engine began pumping its side of the siamese and nurse tanker operations were then stopped.

# Dump Site Operations



The folks wanted to try the single-lane dump tank arrangement...even though they only had square shaped tanks. The goal was to build out a 3 or 4 dump tank arrangement in front of the supply engine.



# Dump Site Operations



As more tankers on the first alarm arrived, the dump site crew went to work collecting suction hose and equipment in preparation for building out the site to a much bigger operation.

# Dump Site Operations



Using the MABAS process, a second alarm was struck bringing with it another “wave” of tankers.



# Dump Site Operations



North Liberty Engine 117 arrived at the dump site and their 1,000 gallons of water was needed. Thus, the operator positioned the rig out of the way and pumped off the water using a 5-inch hose line feeding into the main dump tank.

# Dump Site Operations



All of the tankers could side dump which made the single-lane dump tank arrange work quite well. The white line on the dump chute indicates when it is time to “cut and run” for another load of water.



# Dump Site Operations



As the dump site operation expanded, dump tank signs arrived on one of the units. The folks decided to use the signs to help in the off-loading process.

# Dump Site Operations



In addition, matching handheld signs were used by the dump site “traffic director” to help guide tankers to the correct off-loading point. This concept worked really well!



# Dump Site Operations



At the fill site, one of the loading stations had a “fill site package” that had sets of 4-inch cam lock fittings. As tankers cycled through the fill site, they were outfitted with the male cam lock fitting so that the next loading session would go faster. This was another great idea that worked very well!

# Dump Site Operations



Around the 1-hour mark, the dump site crew worked to place a second, suction line in operation for the dump site engine. Because Engine 141 was outfitted with suction inlet control valves (Hale MIV), the second suction line was able to be brought on-line without an interruption in flow.



# Dump Site Operations



The dump site crew spread out the third and fourth dump tanks in order to allow two tankers to off-load at the same time.

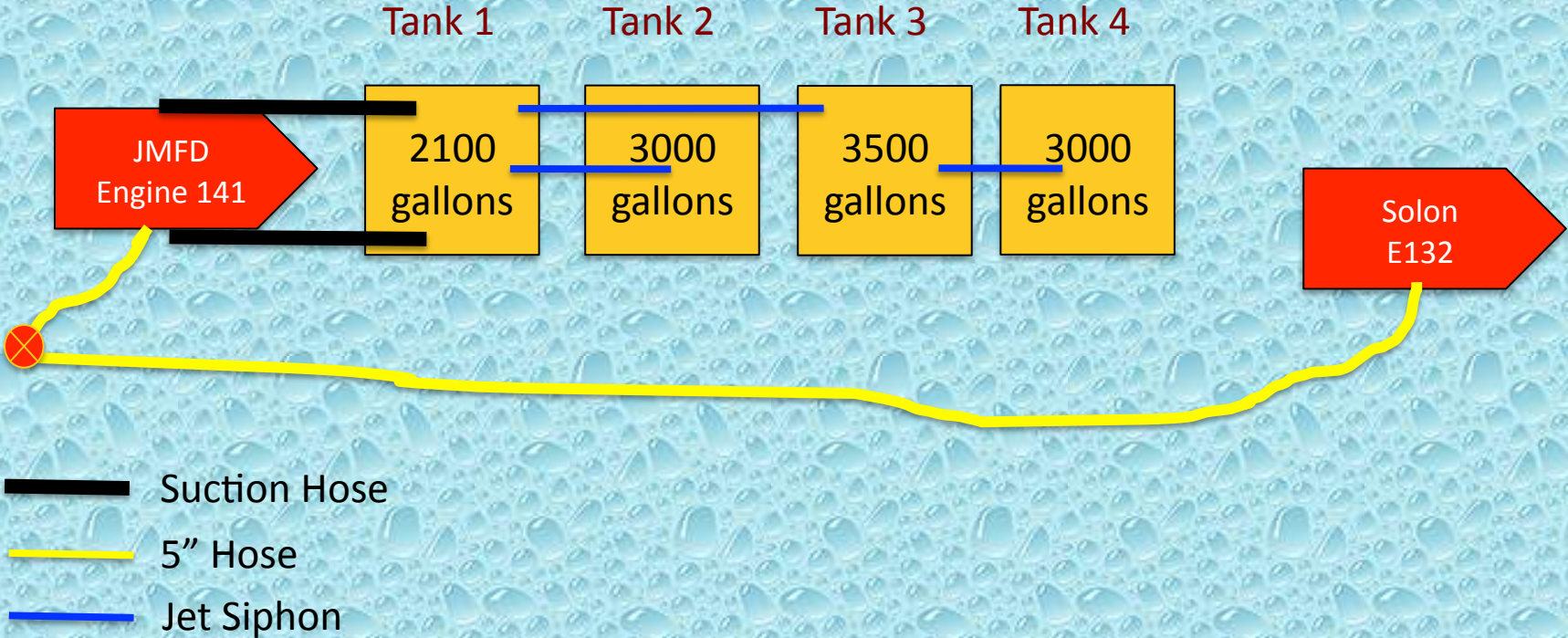
# Dump Site Operations



By adding in the second suction intake, the dump site pumper (Engine 141) was able to improve its 1,250 gpm capacity and thus supply the attack engine AND supply four jet siphons...three of which are shown in this photo. All three jet siphons have excellent looking output streams.



# Dump Site Layout



# The Fill Site

- For this drill – two fill sites were used. Both were co-located along the shore of Lake McBride.
- The fill sites provided about a 3.0-mile round trip for the units hauling water.
- The lake provided ample water volume to support the drill, however apparatus access was a bit of a problem as tankers struggled some to pass each other due to the road design.
- Two, 1,000 gpm pumpers were used at the lake to support the tanker fill stations.



# Fill Site Operations



Coralville Engine 72 (1,000 gpm) used two, Turbo Draft devices to supply water back to a dump tank. The pumper then drafted and loaded tankers at just under the 1,000 gpm goal.

# Fill Site Operations



Rodger Sill from the Stanley FD brought a “tanker loading package” to use. The package consisted of an LDH manifold, some valves, and most importantly, 4-inch hose with cam lock fittings to speed up the loading process. Coralville Engine 72 supplied this operation.



# Fill Site Operations



The 4-inch hose with cam locks sped up the loading process while also being manageable in terms of making and breaking connections. The manifold also supplied a 5-inch fill hose for those tankers loading using 5-inch hose.

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# Fill Site Operations



The Coralville fill site crew getting ready to load a tanker. There were extra cam lock fittings for the crew to attach to tankers needing one.



# Fill Site Operations



North Liberty Engine 117 established a second fill site after pumping off its water at the dump site. The crew drafted directly from the lake and loaded tankers at a fill rate just over 1,000 gpm.

# Fill Site Operations



Engine 117 had no high-flow discharge so the crew used two, 2-1/2-inch lines to feed an LDH appliance and then load tankers using 5-inch LDH.



# Fill Site Operations



Loading tankers at the 1,000 gpm flow rate was the goal of this fill station and they did just that!

# The Results

- The drill was stopped at the 2:00-hour mark.
- Water flow was never interrupted during the entire drill.
- An estimated 62,750 gallons of water were flowed through the attack engine during the drill producing an average flow rate of 546 gpm.
- A peak flow of 800 gpm was sustained for the final 30 minutes of the drill.



# The Lessons Learned

- At this drill, a nurse tanker operation was used during the early moments of the drill which allowed the crews to set-up the dump site without the pressure of running out of water in a couple of minutes.
- The single-lane arrangement of dump tanks proved successful. The arrangement allowed for easy travel, side-dumping, and kept a lane of traffic open.

# 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, folks worked to try and use the same fitting to load all of the tankers – this made the loading very efficient at the cam lock site.



# 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 – as well as adaptors.
- 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.

# 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 Johnson County Mutual Aid Association for sponsoring and the Jefferson-Monroe and Solon Fire Departments for hosting this seminar.



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