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Shelby County EMA & Alabama Fire College
Shelby County, Alabama

Rural Water Supply Operations Seminar
2-hr Water Supply Drill
May 15, 2016
Summary Report

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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.

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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 Shelby County Fire and EMS Training Center in Calera, AL.
- 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 Shelby County and surrounding areas.

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The 2-hour Water Supply Drill

- The tanker shuttle drill was held on May 15th in Montevallo on the campus of the University of Montevallo.
- 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 requires fire departments to demonstrate the 2-hours test, the test is still a reasonable standard by which fire departments can compare their water supply operations. (ISO now uses a computer model.)

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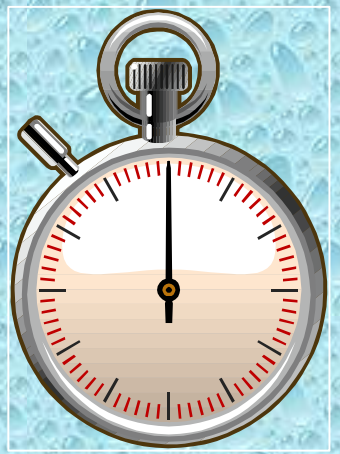
The ISO Test

- 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



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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.

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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.

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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!

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Water Supply Drill Participants

- *The participants for the drill were from eleven different fire departments in the Shelby County area and the water hauling apparatus was representative of the type of water supply support that would respond to a structure fire in Shelby County.*

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Drill Participants

- Brierfield Engine 203
  - 1,500 gpm pump w/475 gal tank
- Brierfield Tanker 200
  - 3,000 gal tank

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Drill Participants

- Brierfield Tanker 206
  - 1,000 gpm pump w/2,500 gal tank
- Montevallo Engine 83
  - 1,500 gpm pump w/1,000 gal tank

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Drill Participants

- Four Mile Tanker 262
  - 200 gpm pump w/2,600 gal tank

- Four Mile Tanker 263
  - 1,250 gpm pump w/2,000 gal tank

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Drill Participants

- West Shelby Engine 241
  - 1,000 gpm pump w/750 gal tank
- County 17 Tanker 213
  - 1,500 gpm pump w/2,000 gal tank

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Drill Participants

- Shelby Tanker 113
  - 250 gpm pump w/2,000 gal tank
- Calera Engine 23
  - 1,500 gpm pump w/1,000 gal tank

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Drill Participants

- Pea Ridge Engine 101
  - 1,000 gpm pump w/750 gal tank

- Pea Ridge Tanker 101
  - 300 gpm pump w/1,800 gal tank

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Preparation

The apparatus and crews assembled in a parking lot on campus. Crews were briefed on the mission and on safety rules.

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The Drill Begins

Montevallo Engine 83 was the first unit to arrive on the scene. Time was started when the engine came to a complete stop. The crew stretched a portable monitor in preparation for the 250 gpm flow at the 5-minute mark.

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Dump Site Operations

County 17's Tanker 213 was next to arrive. The unit set up for nurse tanker operations while crews deployed the dump tank. The plan was to build out a 3-dump tank set-up to support a 1,000 gpm flow to Montevallo's aerial tower.

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Dump Site Operations

Flow was started at 250 gpm at the 5-minute mark and by the 11-minute mark, dump tank operations were underway using a single, 2,000-gallon dump tank. The 1st Tanker Task Force had been alerted and units from that group were enroute.

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Dump Site Operations

Brierfield Tanker 206 was used as a nurse tanker while crews worked to build out the dump site. Very little water was used in this configuration, but the tanker provided a very important security blanket during the time period.

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Dump Site Operations

At the 15-minute mark, flow was moved to 500 gpm using the ground-based master stream and crews worked to get a second dump tank into position. Pea Ridge Engine 101 (1,000 gpm) was positioned to help run jet siphons.

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Dump Site Operations

Shelby Tanker 113 arrived as part of a tanker task force and provided some much needed water – 2,000 gallons to be more precise!

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Dump Site Operations

Calera Engine 23 (1,000 gallons) was used as a back-up water supply if needed. They connected to the clappered siamese and supported water supply operations in between the arrival of tankers.

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Dump Site Operations

At the 30-minute mark, flow was moved to 800 gpm and a three-dump tank operation was underway.

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Dump Site Operations

At the one-hour mark, the flow was moved to 1,000 gpm using the aerial tower device.

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Water Transfer Operations

One of the issues that arose was the ability to transfer water fast enough in order to keep up with the fire flow. Dual jet siphons were needed from both peripheral tanks into the primary dump tank in order to meet the flow demand.

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Dump Site Operations

Once the four jet siphons were in operation, supporting the 1,000 gpm flow was no problem.

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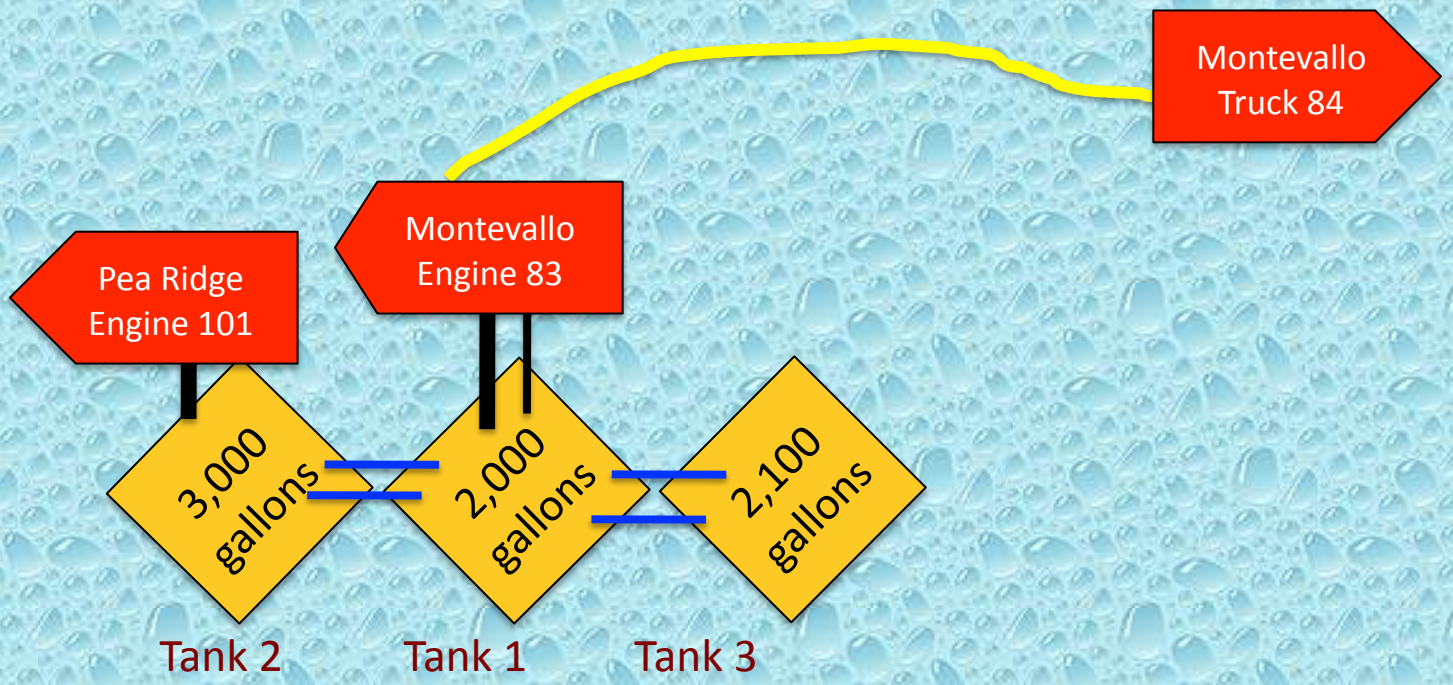
Dump Site Layout



Suction Hose

5” Hose

Jet Siphon

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The Fill Sites

- For this drill – two fill sites were used.
- Both sites provided about a 1.2-mile round trip for units hauling water.
- The first fill site was located along Shoal Creek in Montevallo at the end of a dead-end street.
- The creek provided ample water volume to support the drill and access was not a problem.
- A single, 1,500 gpm pumper was used at the creek to support the tanker fill station.

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The Fill Sites

- The second fill site was located at College Lake which was to the west of the dump site.
- The site used a man-made lake that was located on the campus of the University of Montevallo.
- The lake provided ample water volume to support the drill and access to the lake was not a problem.
- A single, 1,000 gpm pumper was used at the lake to support the tanker fill station.

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Shoal Creek Fill Site

Brierfield Engine 203 (1,500 gpm) drafted from the creek and supplied water to an LDH manifold on 5-inch supply hose. The creek provided plenty of water, even thought access was a bit limited.

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Shoal Creek Fill Site

A floating barrel strainer was used on the suction hose in order to maximize flow.

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Shoal Creek Fill Site

Engine 203's crew built out a multi-station fill site using 5-inch hose and LDH appliances. Most of the tankers could load directly with 5-inch LDH – but some could not. In all cases though, only one tanker was loaded at a time.

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Shoal Creek Fill Site

The use of LDH manifolds at tanker fill sites allows for better control of loading operations up close to where the loading is occurring.

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College Lake Fill Site

West Shelby Engine 241 (1,000 gpm) is shown here on the right drafting from the lake and loading the tanker on the left.

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College Lake Fill Site

A barrel strainer was used to gain maximum flow under draft conditions. The strainer was placed on a roof ladder to keep the strainer off of the bottom of the lake.

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College Lake Fill Site

Engine 241 did not have a high-flow discharge so they pumped dual 3-inch lines to the LDH manifold and loaded tankers using 5-inch LDH.

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The Results

- The drill was stopped at the 2:00-hour mark.
- Water flow was interrupted once at the 73-minute mark for about 55 seconds due to a jet siphon issue.
- An estimated 93,000 gallons of water were flowed through the attack engine during the drill producing an average flow rate of 816 gpm during the 2-hr event.

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The Lessons Learned

- The nurse tanker operation was critical to the success of this drill – especially during those early few moments when rigs are still arriving on the scene.
- The nurse tanker set-up allowed the dump site engine and crew some additional time to get that first dump tank set-up for an efficient operation.

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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, almost every fill line had a Storz-style connection which really made a difference in reducing the amount of time needed to connect fill lines.
- Standardized fill connections in a mutual aid group is clearly a “best practice” when it comes to tanker shuttle operations.

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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.

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The Lessons Learned

- High-flow discharges are an important feature on pumpers that support LDH operations. When a pumper does not have an LDH discharge, then it is important to carry an appliance and short lengths of hose that can be used to supply high-flows using multiple discharges.
- The use of dual, 3-inch lines feeding the LDH manifold at the lake fill site made a big difference in loading the tankers fast.

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Drill Videos

Be sure to watch videos from the drill on the GotBigWater YouTube Channel.

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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 Shelby County EMA and the Alabama Fire College for sponsoring and hosting this seminar.

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