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Austin County Firefighters Association
Austin County, Texas

Rural Water Supply Operations Seminar
2-hr Water Supply Drill
February 26, 2017
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

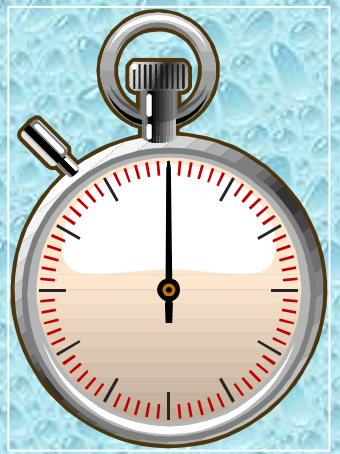
- The 2-day seminar started with a 4-hour classroom session to review the basics of rural water supply operations.
- The review session was held at the Bellville VFD's Station 1.
- Once the classroom part was done, the seminar continued with 8 hours of practical work on fill-site and dump site operations.
- The program concluded with the 2-hr ISO tanker shuttle exercise and program review.
- Seminar participants were from Austin County and the surrounding area.

The 2-hour Water Supply Drill

- The tanker shuttle drill was held on February 26th at Bellville High School.
- 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 Austin 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 Bellville area.*

Drill Participants

- Bellville Engine 6
  - 1,250 gpm pump w/1,000 gal tank
- Bellville Tanker 1
  - 500 gpm pump w/3,500 gal tank

Drill Participants

- Bellville Tanker 4
  - 500 gpm pump w/1,500 gal tank

- Pattison Tanker 2
  - 1,000 gpm pump w/2,000 gal tank

Drill Participants

- Cat Spring Tanker 809
  - 500 gpm pump w/2,100 gal tank

- Cat Spring Tanker 804
  - 1,000 gpm pump w/2,100 gal tank

Drill Participants

- Cat Spring Engine 803
  - 1,500 gpm pump w/750 gal tank

- Bastrop Tend 243
  - 1,000 gpm pump w/2,000 gal tank

Drill Participants

- New Ulm Engine 1106
  - 1,250 gpm pump w/1,200 gal tank

- Blieberville Tanker 306
  - 250 gpm pump w/2,000 gal tank

Drill Participants

- Shelby Tanker 1
  - 500 gpm pump w/2,000 gal tank

Preparation

Units staged at the Bellville fire station where they received drill assignments and a safety briefing.

The Drill Begins

New Ulm Engine 1106 was the first-arriving unit and assumed the role as the attack pumper. The crew stopped to lay a 400-ft, 3-inch supply line before setting up to operate an attack line. The stopwatch was started when the New Ulm engine driver applied the air brakes.

Dump Site Operations

As additional units arrived on the scene, folks helped set up dump tanks. In the meantime, Bellville Engine took position as the dump site pumper and was prepared to supply tank water to Engine 1106 through the 400 ft of supply if needed. Pattison Tanker 2 (2000 gal) was the first tanker to dump a load of water.

Water Flow is Started

At the 5:40-minute mark, Engine 1106 initiated water flow at 200 gpm using a single, 1-3/4-inch attack line.

Dump Site Operations

Cat Spring Tanker 804 (2100 gal) was the second tanker to arrive. Crews grabbed the tanker's dump tank while the tanker prepared to dump its water.

Dump Site Operations

At around the 13-minute mark, three dump tanks we down and in operation. Water flow was increased to 400 gpm at the 15:00 minute mark.

Dump Site Operations

Units on the second Tanker Task Force arrived. The 4,000 gallon dump tank from the Blieberville tanker was grabbed and set-up. Flow was moved to 560 gpm at the 20-minute mark and then to 800 gpm at the 80-minute mark.

Dump Site Operations

Bellville Tanker 1 (3500-gal) was the only vacuum tanker in the drill. As expected, the vacuum tanker proved quite effective in hauling water, especially when it came to self-loading at the fill site.

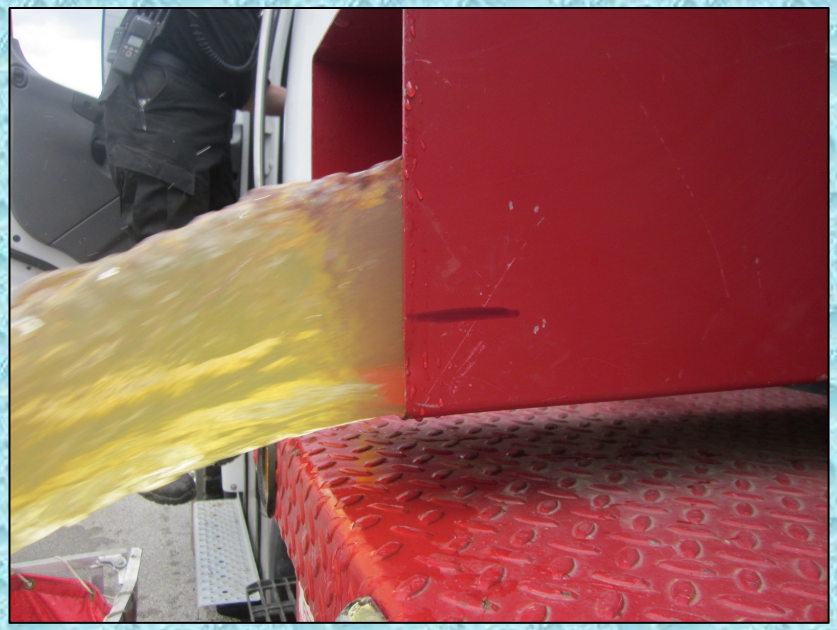
Water Transfer Operations

Water transfer operations are a critical component at any multi-dump tank water supply operation. Folks at this drill knew the importance of water transfer and worked quickly to get those devices set up and running.

Dump Site Operations

Knowing when to “cut and run” is important in tanker shuttle work. A typical 2,000-gal gravity dump tanker dumps most of its water in the first 60 to 90 seconds. Waiting 3 minutes to dump all water actually reduces the efficiency of the tanker.

Dump Site Operations



The black line on this dump chute indicates to the driver/operator when to “cut and run” for another load of water.

Dump Site Operations

To help gain more output capacity, Engine 6 added a 3-inch suction line which helped to support the jet siphons and thus increase output to the attack pumper.

Dump Site Operations

One of the challenges was overcoming the friction loss in the supply hose. In order to hit the 800 gpm mark, a second, 3-inch supply line was hand-laid back to the supply pumper.

Dump Site Operations

When moving to a three-dump tank (or larger) operation, spacing of the dump tanks becomes important because chances are quite good that two or more tankers will need to dump simultaneously – especially when flows approach the 1000 gpm mark.

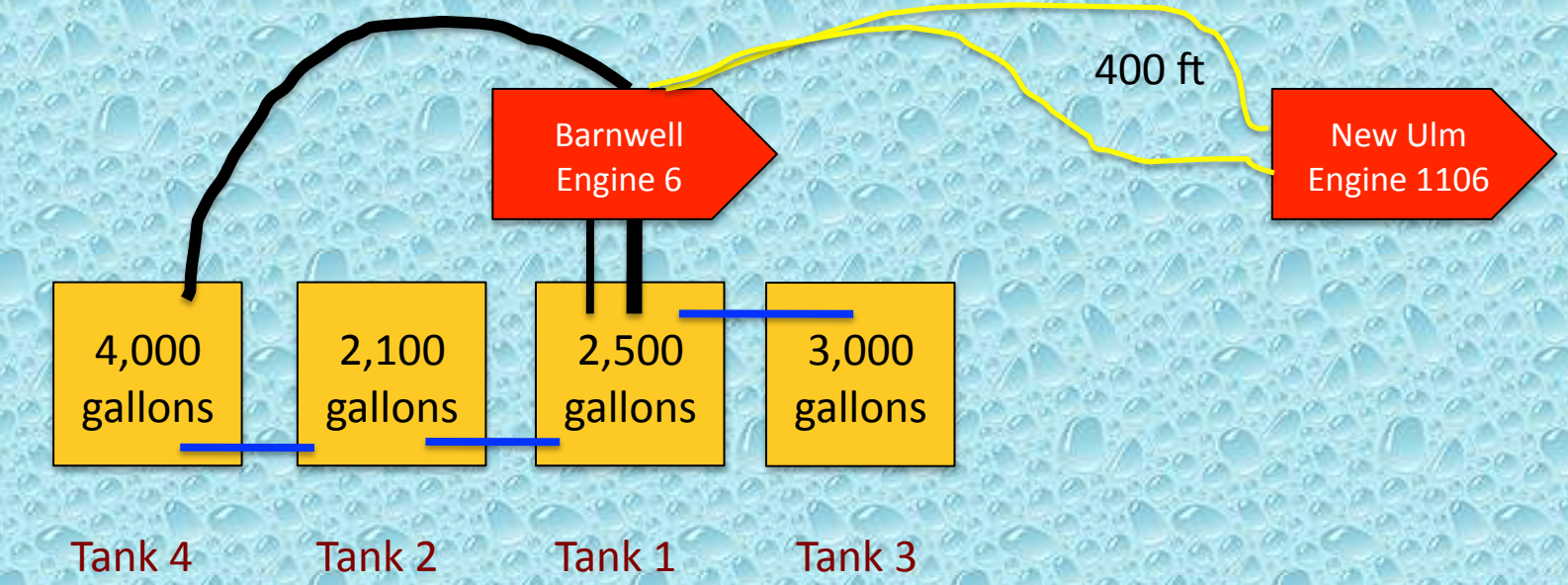
Dump Site Operations

At the 92-minute mark, flow was moved to 1180 gpm at the attack engine and the arrival time of tankers at the dump site grew further and further apart.

Dump Site Operations

In order to reach the 1180 gpm flow at the attack engine, the supply engine went to a third suction line – a 6-inch line from the other side of the pumper.

Dump Site Layout



Suction Hose

3” Hose

Jet Siphon

The Fill Sites

- For this drill – one fill site was used. It was located at a fire hydrant on the campus of the high school.
- The fill site provided about a 2.5-mile round trip for the units hauling water.
- The hydrant provided ample water volume to support the drill and access was not a problem.
- A single, 1,500 gpm pumper was used at the pond to support the tanker fill station.

Hydrant Fill Site

As many times in the “real world,” the first arriving tanker at the fill site had to load directly from the hydrant.

Hydrant Fill Site

Eventually, a pumper arrived at the fire hydrant and was able to support the loading operation. Cat Spring Engine 803 (1500 gpm) was able to take water from the fire hydrant and load tankers at a rate of 1000+ gpm.

Hydrant Fill Site

Due to the variety of fill connections, adaptors and hose connections played an important role at the fill site.

Hydrant Fill Site

The hydrant was also used in an “open relay” manner to fill a 3500-gal dump tank from which the vacuum tanker filled each time. The self-loading feature of the vacuum tanker is the key to its success in a water hauling operation.

Hydrant Fill Site

In the end, the single fill site was able to support the entire operation. Of course, the fill site was a real "bee hive" of activity with efficiency as its top priority.

The Results

- The drill was stopped at the 2:00-hour mark.
- Water flow was never interrupted during the entire drill.
- An estimated 75,000 gallons of water were flowed through the attack engine during the drill producing an average flow rate of 714 gpm.
- A peak flow of 1,180 gpm was sustained for the last 28 minutes of the drill.

The Lessons Learned

- At this drill, an attack pumper and a supply pumper were used at the dump site. This arrangement allowed for each pump operator to focus on just one area of operation – attack ops or supply ops.
- The supply pumper had a control valve on the driver side suction inlet which allowed the addition of a third suction line without having to shut down operations much later in drill.

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, there were different tanker fill connections which required adaptors and thus slowed down some of the fill operations.
- Having a standardized fill connection for all tankers increases fill efficiency and decreases fill 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 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 Austin County Firefighters Association for sponsoring, the Bellville VFD for hosting, and TEEX for supporting this seminar.

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