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Bastrop County Firefighters Association
Bastrop, Texas

Rural Water Supply Operations Seminar
2-hr Water Supply Drill
June 1, 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

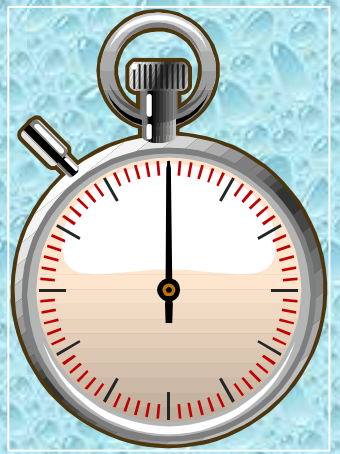
- The 2-day seminar started on Saturday with a 4-hour classroom session to review the basics of rural water supply operations.
- The review session was held at Bastrop Fire Department Station 3.
- Once the classroom part was over, the seminar continued with several hours of practical work on fill-site and dump site operations.
- The program concluded on Sunday with the 2-hr ISO tanker shuttle exercise and program review.
- Seminar participants were from Bastrop County and Central Texas areas.

The 2-hour Water Supply Drill

- The tanker shuttle drill was held on June 1st at Fire Station 3.
- 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 26 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 Bastrop County.*

Drill Participants

- Bastrop Engine 231
  - 1,750 gpm pump w/1,000 gal tank
- Bastrop Engine 241
  - 1,750 gpm pump w/1,000 gal tank

Drill Participants

- Bastrop Tender 233
  - 1,000 gpm pump w/2,000 gal tank
- Bastrop Tender 243
  - 1,000 gpm pump w/2,000 gal tank

Drill Participants

- District 5 Tender 119
  - 1,000 gpm pump w/2,000 gal tank
- Elgin Tender 1
  - 500 gpm pump w/2,000 gal tank

Drill Participants

- Paige Tender 685
  - 1,000 gpm pump w/2,000 gal tank

- Lake Jackson Tanker 1
  - 1,250 gpm pump w/3,000 gal tank

Drill Participants

- North Hays Tender 75
  - 750 gpm pump w/2,000 gal tank

- Latium-Wesley Tender 9032
  - 1,250 gpm pump w/3,000 gal tank

Drill Participants

- Smithville Engine 4
  - 1,250 gpm pump w/750 gal tank
- Ferrara Demo Tender
  - 1,000 gpm pump w/2,000 gal tank

Preparation

Units were first staged in the fire station parking lot and crews were briefed on the operation. Units then were relocated about ½-mile away to a camp area where they awaited dispatch.

The Drill Begins

Bastrop Engine 231 arrived on the scene and the timer was started.

Dump Site Operations

The crew worked quickly to get the first dump tank set up and ready for water. The goal was to conduct the operation without the use of a nurse tender.

Dump Site Operations

As tenders from the 1st Alarm assignment arrived on the scene, crews grabbed additional items needed – such as a second dump tank.

Dump Site Operations

At the 3:59-minute mark, operations were well underway for the build-out of a multi-dump tank water supply operation. Water is being dumped into the 1st dump tank as the 5:00 minute mark approaches.

Dump Site Operations

Lake Jackson Tanker 1 dumps its first load of 3,000 gallons and the dump site pumper begins drafting operations.

Dump Site Operations

Water flow got started a little bit late because of a primer issue with the dump site pumper. Once the primer was able to be activated, flow was started at 250 gpm using a TFT Blitzfire.

Dump Site Operations

At the 15:00-minute mark, flow was moved to 500 gpm and a third dump tank was placed into operation.

Dump Site Operations

Three dump tanks are in operation and plans are underway to expand to a fourth tank in expectation of flowing 1,000 gpm. The dump tanks are nicely spaced out to accommodate multiple tenders at the same time.

Dump Site Operations

At around the 27-minute mark – things got a little "tight". What is missing from the photo? Tenders! Fortunately, a tender arrived about 1 minute later and flow was not interrupted.

Dump Site Operations

Lake Jackson Tanker 1 positions to dump its third load of 3,000 gallons. The tanker was brand new and the crew brought it to class to practice using it.

Dump Site Operations

Work is underway to place the fourth dump tank in operation. Water transfer became important as did the need for an extra long jet siphon set-up.

Dump Site Operations

At the 46:00 minute mark, all four dump tanks were now in operation and plans to move to a 1,000 gpm flow were underway.

Dump Site Operations

Ferrara Fire Apparatus provided a 2,000 gallon tender for the drill and folks took turns driving and operating the rig during the shuttle.

Dump Site Operations

At the 64-minute mark, flow was moved to 1,000 gpm using a portable deck gun.

Dump Site Operations

The folks from North Hays County brought vinyl numbering signs for use in marking the dump tanks. The numbers were very useful when directing the tenders during dumping operations.

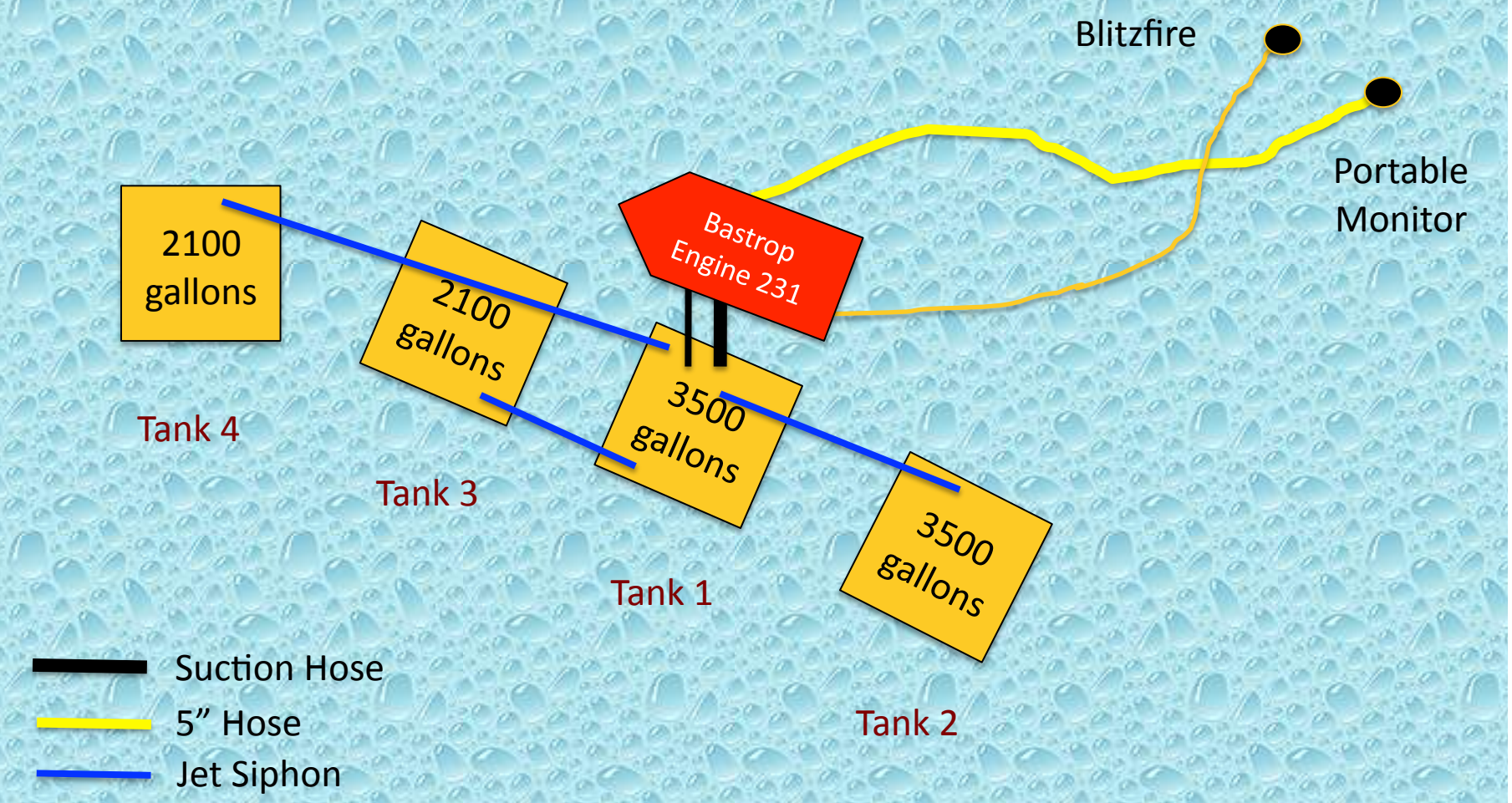
Dump Site Operations

The operation is in “full-swing” at 1,000 gpm and once again, no tenders dumping. Crews at the fill sites had to “step it up” a bit – which they did.

Dump Site Operations

At the 91-minute mark, flow was moved to 1,575 gpm using both the portable deck gun and the Blitzfire.

Dump Site Layout



The Fill Sites

- For this drill – three fill sites were used.
- The first fill-site placed into operation used Lake Bastrop as the water source and provided a 4.2-mile roundtrip for the units hauling water.
- This fill site utilized a boat launch area and the lake provided ample water volume to support the drill and access was not a problem.
- A single, 1,750 gpm pumper was used to support the tender fill station.

The Fill Sites

- The second fill site was located on Tuck Lake at a culvert where the road passed over a narrow area of the lake.
- This fill site provided an 8.1-mile roundtrip for units hauling water.
- The site provided ample water volume to support the drill and access was not a problem.
- A single, 1,250 gpm pumper was used to support the tender fill station.

The Fill Sites

- The third fill site was located at Hicks Lake and required the use of two portable pumps to supply water.
- This fill site provided a 2.1-mile roundtrip for units hauling water.
- The lake provided an ample water source, however, vehicle access was limited – thus, the use of the portable pumps.
- A single, 1,000 gpm tender and two, portable pumps were used to support the tender fill station.

Lake Bastrop Fill Site

This fill site used a 500 gpm portable pump and a TurboDraft to support its tender filling operation. Both devices pumped water into a 3,000 gallon dump tank from which a 1,750 gpm drafted and filled tenders. This “open relay” is a great tool for using lower flow devices to support a 1,000 gpm fill rate.

Lake Bastrop Fill Site

Bastrop Engine 241 operated as the fill site pumper and drafted from the 3,000 gallon dump tank. Tenders were filled at rates over 1,000 gpm using LDH.

Lake Bastrop Fill Site

During the set-up process for this fill-site, crews used the side suction inlet to ensure maximum flow. They also used a TFT low level strainer as their suction strainer of choice.

Lake Bastrop Fill Site

The discharge flow from the TurboDraft was directed via 5-inch LDH into this homemade tube which allowed water to be pumped into the dump tank.

Tuck Lake Fill Site

Smithville Engine 4 (1,250 gpm) established a draft where water passed under the road through a culvert. The lift was less than 10-feet and the water was clean and plentiful.

Tuck Lake Fill Site

The Smithville engine did not have a high-flow discharge, so they pumped four, 2-1/2-inch lines into a reversed LDH manifold and filled tenders at a 1,000 gpm rate.

Hicks Lake Fill Site

District 5's Tender 119 (1,000 gpm) was used as an engine instead of a water hauler. This fill site also used an open relay set-up to provide water for drafting.

Hicks Lake Fill Site

A 250 gpm and a 500 gpm portable pump were used to draft out of the lake and pump water back to the dump tank via 5-inch LDH.

Hicks Lake Fill Site

The two supply lines were then fed into a jumbo siamese and then into a single-5-inch line that supplied the dump tank.

The Results

- The drill was stopped at the 2:00-hour mark.
- Water flow was never interrupted!
- An estimated 99,688 gallons of water were flowed through the attack engine during the drill producing an average flow rate of 879 gpm – which was a 41 gpm improvement over the December 2013 drill!

The Lessons Learned

- At this drill, the dump site was set-up in less than 5 minutes which meant that there was no need for a nurse tanker operation.
- The electric primer on the dump site pumper failed to operate for several minutes – which is what caused the initial water flow not to occur until the 7:21-minute mark.
- The use of the 1,750 gpm pumper at the dump site made a big difference in being able to support the 1,000 gpm flow while operating dual jet siphons.

The Lessons Learned

- The use of intake control valves is important when using the same pumper to draft and pump attack lines. However, it is also important to know the limitations of the valves when attempting higher flow volumes.
- At this drill, the external intake control valve would limit flow to under 1,000 gpm – so the valve was removed at the very beginning of set-up operations – thus never causing a restriction.

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.
- Portable pumps can be quite useful when used with LDH. At this drill, two portable pumps were able to support a 1,000+ gpm tender loading site with little problem.
- The TurboDraft device used in combination with the portable pump proved quite effective in supporting the Lake Bastrop fill site operation. However, the 500 gpm portable pump appeared to out-perform the TurboDraft in that set-up arrangement.

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.
- 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.

The Lessons Learned

- Although most of pumpers and tankers could work with 5-inch LDH, there was a limited number of LDH valves and appliances available on the mutual aid apparatus.
- The standardized inventory on the Bastrop FD pumpers and tenders made it easy for personnel to locate and retrieve equipment. Mutual aid companies should strive to develop similar inventories of LDH appliances and adaptors.

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 Bastrop County Firefighters Association for sponsoring and hosting this seminar and to Ferrara for providing a pumper and a tender for folks to use.

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This program was developed by
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