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Oconee County Emergency Services
Westminster, South Carolina

Rural Water Supply Operations Seminar
2-hr Water Supply Drill
January 13, 2013
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

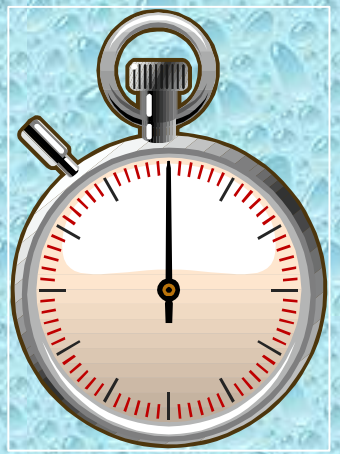
- The 2-day seminar started on Saturday with a 4-hour classroom session to review the basics of rural water supply operations.
- The review session was held at the Westminster Fire Department.
- Once the classroom part was done, the seminar continued with several hours of practical work on fill-site and dump site operations.
- The program concluded on Sunday with the 2-hr ISO tanker shuttle exercise and program review.
- Seminar participants were from Oconee County, several nearby counties, Alabama, and Georgia.

The 2-hour Water Supply Drill

- The tanker shuttle drill was held on January 13th at the Hamilton Career Center in Seneca, SC.
- 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 seventeen 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 Oconee County.*

Drill Participants

- Pickett-Post Tanker 14
  - 250 gpm pump w/1,800 gal tank
- Long Cane Tanker 8
  - 500 gpm pump w/3,000 gal tank

Drill Participants

- Cleveland Tanker 10
  - 250 gpm pump w/1,800 gal tank

- Townville Tanker 17
  - 1,000 gpm pump w/2,480 gal tank

Drill Participants

- Central Tanker 2
  - 500 gpm pump w/2,000 gal tank
- Pumpkintown Engine 1
  - 1,500 gpm pump w/1,500 gal tank

Drill Participants

- Oakway Tanker 1
  - 250 gpm pump w/1,800 gal tank

- Oakway Engine 1A
  - 1,500 gpm pump w/1,000 gal tank

Drill Participants

- Crossroads Tanker 13
  - 250 gpm pump w/1,800 gal tank
- South Union Tanker 15
  - 250 gpm pump w/1,800 gal tank

Drill Participants

- Fair Play Tanker 8
  - 250 gpm pump w/1,800 gal tank
- Seneca Engine 7
  - 1,500gpm pump w/1,000 gal tank

Drill Participants

- Keowee Ebenezer Engine 11
  - 1,500 gpm pump w/1,000 gal tank

Preparation

Units staged in the parking lot at the South Cove Road park (Lake Keowee). Crews were briefed and units were prepared for dispatch

The Drill Begins

Oakway Engine 1A was the first-arriving unit at the school and assumed the role as the attack pumper. The unit laid out 300-feet of 5-inch supply line from the main parking area. The stopwatch was started when the Engine driver applied the air brakes.

Attack Engine Set-up

The crew stretched 100-feet of 5-inch hose to a Hose Monster flow diffuser that served as the means by which all water flow would be measured. The diffuser simulated the use of a portable master stream device.

Dump Site Set-up

Pumpkintown Engine 1 was the next unit to arrive on the scene and immediately went to work setting up the dump site.

Dump Site Set-up

Townville Tanker 17 was the first tanker to arrive and provided a dump tank and additional water – all before the 5:00 minute mark.

Water Flow Begins

At the 4:00-minute mark – (one minute early) – water flow was started at the attack pumper at a rate of 500 gpm (which was a bit high).

Dump Site Set-up

As the dump site was being set up, crews also prepared the Pumpkintown rig to serve as a nurse tanker if needed.

Nurse Tanker Operations

Three, 3-inch supply lines were used to supply the 5-inch line that the attack engine had laid out. A three-way manifold valve was used to supply the 5-inch supply line. At the 5:50-minute mark, Pumpkintown began supplying the attack engine using tank water.

Dump Site Set-up

At the 7:40-minute mark, two dump tanks were down and the dump site was operational. The dump site engine switched from tank water to drafting – and dump site operations were underway.

Dump Site Set-up

Crews prepare for water transfer operations as a third dump tank arrives.

Command

Command was established and a system of organization began to develop.

Two Dump Tanks in Use

Around the 12:03-minute mark, a tanker task force was dispatched bringing more resources.

Dump Site Set-up

Water transfer operations were now underway. The beach ball is used to reduce the effects of the vortex created when water levels drop.

Dump Site Set-up

Things were tight for a bit during the gap between the arrival of the original tankers and the tanker task force. But…the first tanker from the task force arrived just in time!

Dump Site Set-up

At the 13:30-minute mark, flow was moved to 750 gpm and the dump site became a very busy place.

Water Transfer Operations

A Kochek low-level strainer w/jet siphon was one of the water transfer devices used at the drill. This one was 4-1/2-inches and had a reduced flow – but still worked okay.

Dump Site Operations

Another “tight” spot at the primary dump tank around the 20:00-minute mark. Fortunately, tankers from the 2nd Tanker Task Force arrived just in time.

Water Transfer Operations

With three dump tanks now in operation, the dump site operation began to stabilize some.

Dump Site Operations

Central's Tanker 2 dumps its 2,000 gallons at the 22:10-minute mark.

3-Tank Operations

More tankers from the 2nd Tanker Task Force arrive and help keep the sustained flow going.

Dump Site Operations

When using detachable dump chutes, it is often easier to just leave the chute at the dump site instead of trying to remove it and stow it in a compartment each time..

Dump Site Operations

Long Cane Tanker 8 dumps its 3,000 gallons of water.

Water Transfer Operations

The flow from this 4-1/2-inch jet siphon is a good, solid stream of water – which is exactly what is needed.

Water Transfer Operations

The dump site crew used a gated-wye to supply two jet siphons. Doing so let the pump operator concentrate on other operations instead of having to open and close valves for jet siphon ops.

Dump Site Operations

A decision is made around the 45-minute mark to increase flow – but a 4th tank would be needed to do so.

Dump Site Operations

Crews grabbed a 4th dump tank (2100 gallons) from Oakway Tanker 1 and deployed it.

Dump Site Operations

Meanwhile – dump site operations continued uninterrupted.

Dump Site Operations

At the 55-minute mark, the fourth dump tank was positioned to the rear of the Pumpkintown engine and readied to receive water.

Dump Site Operations

Pumpkintown's rear intake (equipped with an automatic drafting valve) was readied as well for eventual use in the operation.

Dump Site Operations

In the meantime, water was transferred directly from the 4th tank to the primary tank via a jet siphon operation. At the 60-minute mark, water flow was moved to 1,000 gpm.

4-Tank Operation

With the flow now at 1,000 gpm and with four tanks down, dump site control operations were very critical to success.

Dump Site Operations

At the 90-minute mark, jet siphon operations were stopped in Tank 4 and the rear suction was engaged. Flow was moved to 1,411 gpm where it remained through the end of the drill.

Dump Site Operations

With a 1,411 gpm flow, water transfer operations were critical to success of the operation.

A Moment to Reflect

A little bit of reflection from some seasoned, chief officers!

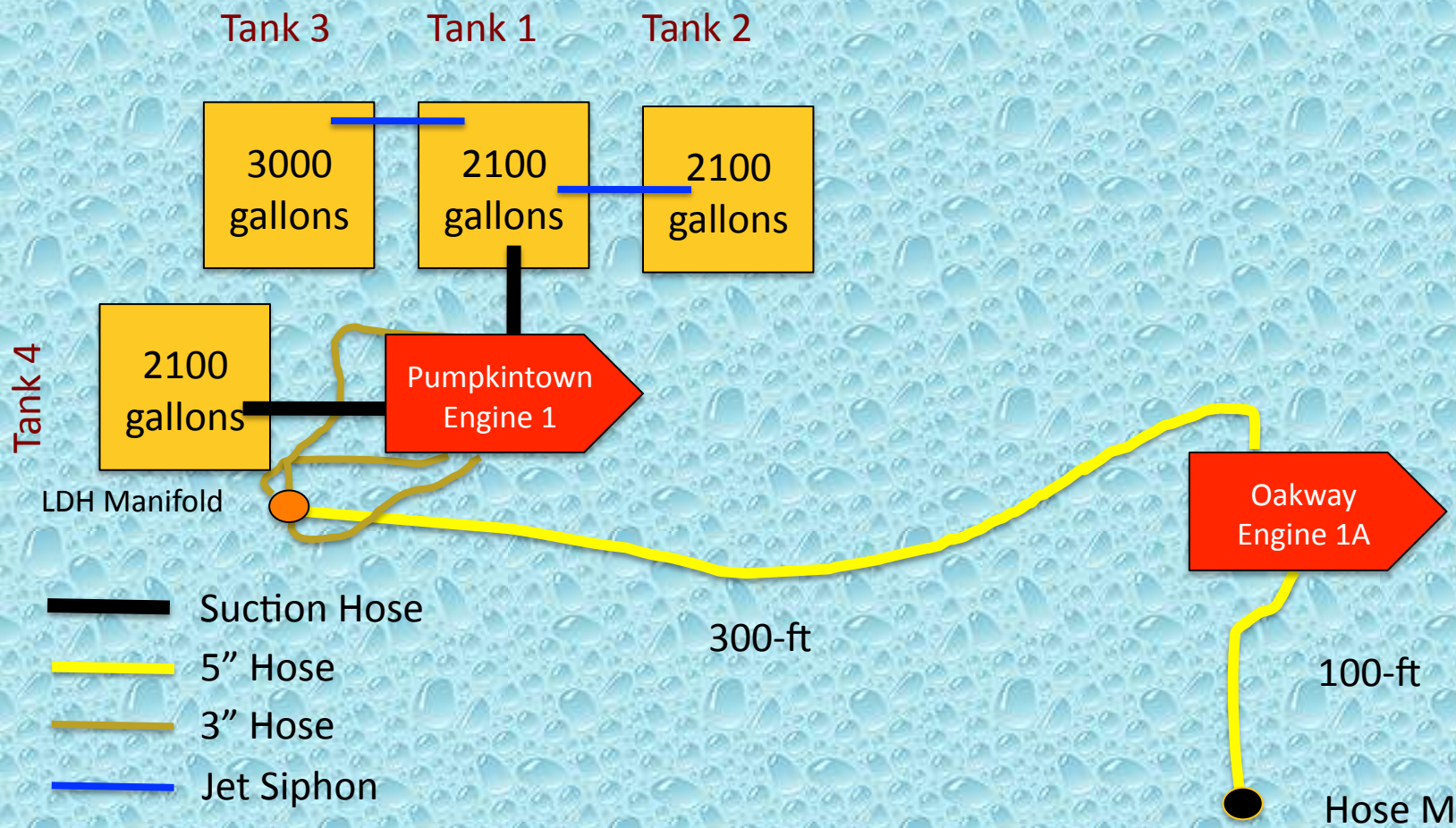
Its All About the Teamwork!

Who says that hauling water can't be fun?

Dump Site Operations

With just a few seconds remaining, all operations were going quite smooth.

Dump Site Layout



The Fill Sites

- For this drill – two fill sites were used.
- Both fill sites provided a 4-mile roundtrip for the units hauling water and used Lake Keowee as the water source.
- The first fill site was located at a boat ramp on South Cove Road.
- The lake provided ample water volume to support the drill and access was not a problem.
- A single, 1,500 gpm pumper was used at the boat ramp to support the tanker fill station.

The Fill Sites

- The second fill site was located on Cane Creek Lane, north of the dump site and it also used a boat ramp.
- The site provided ample water volume to support the drill and access was not a problem.
- A single, 1,500 gpm pumper was used at the boat ramp to support the tanker fill station.

South Cove Fill Site

First-arriving crews worked very quickly and had this fill site operational in less than 10-minutes.

South Cove Fill Site

Townville Tanker 17 arrives at the boat launch parking lot. There was ample space for tanker fill operations.

South Cove Fill Site

The 1,500 gpm pumper (Seneca) drafted using the boat ramp and supplied water back to the tanker loading area using 5-inch hose and a manifold.

South Cove Fill Site

Access to the water was limited but the low level strainer worked just fine. One issue was wave action – it did not pose a problem on this day – but could have on a more busy boating day.

South Cove Fill Site

The pumper supplied the 5-inch hose which was equipped with a manifold.

South Cove Fill Site

Tankers were then filled using dual, 3-inch lines equipped with cam lock style fittings. It is important to note that while both tankers are connected, only one at a time is filled – thus committing the capacity of the pumper to one tanker at at time.

Cane Creek Lane Fill Site

The 1,500 gpm pumper (Keowee-Ebenezer) drafted from the boat ramp and supplied water back to the tanker loading area using a 3-inch and a 2-1/2-inch supply line. The pumper was not equipped to handle LDH.

Cane Creek Lane Fill Site

Inline gate valves were used to control the flow to the tanker which allowed the pump operator at the boat ramp to set his electronic governor and let the pump controls do all of the work.

Cane Creek Lane Fill Site

Two fill site crew members were assigned to make and break the connections. The goal was to operate like a NASCAR pit crew.

Cane Creek Lane Fill Site

The use of cam lock fittings significantly reduced the time needed to connect and disconnect the fill lines.

Cane Creek Lane Fill Site

A pump discharge setting of 130 psi seemed to provide sufficient flow and pressure to fill most tankers at this site.

The Results

- The drill was stopped at the 2:00-hour mark.
- Water flow was never interrupted!
- An estimated 112,330 gallons of water were flowed through the attack engine during the drill producing an average flow rate of 964 gpm.

The Lessons Learned

- At this drill, the dump site was set-up very quickly and crews really hustled to sustain the water flow in the early stages.
- The use of the Pumpkintown pumper at the dump site made a big difference in being able to support the higher flows later in the drill.
- The school layout provided ample space for this large operation and traffic flow was not a problem.

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 cam lock-style connection which really made a difference in reducing the amount of time needed to connect fill lines.

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.

The Lessons Learned

- Although most of pumpers and tankers could work with 5-inch LDH, there was a very limited number of LDH valves and appliances available for use.
- Fortunately, a manifold was available at the dump site early – else, flow most likely would have been interrupted.

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 Oconee County Emergency Services for sponsoring and hosting this seminar.

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This program was developed by
GBW Associates, LLC

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