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**Croton-on-Hudson Fire Department
Croton-on-Hudson, New York**

**Rural Water Supply Operations Seminar
2-hr Water Supply Drill
April 28, 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 Harmon Firehouse.
- 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 the Croton FD as well as several surrounding departments.

The 2-hour Water Supply Drill

- The tanker shuttle drill was held on April 28th at the Croton-Harmon Train Station in Croton-On-Hudson, NY.
- 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 twelve 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 the Croton-on-Hudson area.*

Drill Participants

- Croton Engine 119
 - 1,500 gpm pump
w/750 gal tank
- Croton Engine 120
 - 2,000 gpm pump
w/1,000 gal tank



Drill Participants

- Croton Tanker 10
 - 1,500 gpm pump
w/3,000 gal tank
- Yorktown Heights Tanker 14
 - 1,250 gpm pump
w/2,700 gal tank



Drill Participants

- Montrose Engine 121
 - 2,000 gpm pump
w/980 gal tank
- Veterans Affairs FD
Engine 225
 - 1,500 gpm pump
w/1,000 gal tank



Drill Participants

- Pocantico Hills Tanker 12
 - 1,750 gpm pump w/2,700 gal tank
- Bedford Hills Tanker 5
 - 2,000 gpm pump w/2,750 gal tank



Drill Participants

- Garrison Tanker 15-41
 - 750 gpm pump w/1,500 gal tank
- Croton Engine 118
 - 1,250 gpm pump w/1,000 gal tank



Preparation



Units staged at the Harmon Firehouse where crews were briefed and units were prepared for dispatch.

The Drill Begins



Croton Engine 119 was the first-arriving unit at the train station and assumed the role as the attack pumper. The unit laid out 200-feet of 5-inch supply line and the stopwatch was started when the engine driver applied the air brakes.

Dump Site Set-up



Montrose Engine 121 arrived and began setting up as the dump site pumper while Pocantico Hills Tanker 12 engaged in nurse tanker operations.

Dump Site Set-up



Yorktown Heights Tanker 14 assisted in getting the first dump tank ready for drafting operations.

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Incident Command



Chief Chet Swirski (Yorktown Heights) assumed the command and coordinated the operation of the dump site.

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Dump Site Operations



With the first tank down, a second dump tank is dropped off in anticipation of expanding the operation.

Dump Site Operations



At the 4:45-minute mark, water flow was started at 630 gpm.

Dump Site Operations



With the first dump tank now operational, efforts focus on getting a second tank in operation.

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Dump Site Operations



Additional tankers begin to arrive and the second dump tank (3,500 gallons) is set-up.

Dump Site Operations



Croton Tanker 10 dumps its 3,000 gallons of water – a little bit premature since no transfer device is yet in place.

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Dump Site Operations



A third dump tank (3,000 gallons) is set-up as is a jet siphon to transfer water from the second dump tank into the primary dump tank.

Water Transfer Operations



Crews work quickly to get water transfer devices set-up so that the dump site can move to a three-dump tank operation.

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Water Transfer Operations



The first jet siphon device is made operational and water is now transferred from the second dump tank into the primary dump tank.

Dump Site Operations



Additional tankers continue to arrive and off-load their water. The nurse tanker operation is discontinued and that tanker moves into the water hauling rotation.

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Tie Up Those Drains



It is important to tie up dump tank drains. While this leak is not huge, it would help create a big mess in a more rural setting or during times of freezing temperatures. Best practice for older style tanks is to tie the drains up on the inside of the dump tank.

Dump Site Operations



An interesting situation occurred when the bumper height on this tanker was greater than the height of the dump tank – which complicated backing actions a bit.

Dump Site Operations



Flow was moved to 750 gpm at around the 15:00-minute mark. At the 21:00-minute mark, three dump tanks were in use.

4th Dump Tank



With three dump tanks now in operation, a fourth dump tank (3,500 gallons) was acquired and crews worked to place it in operation.

Flow Moved to 1,000 gpm



At the 57:00-minute mark, flow was moved to 1,000 gpm. A Hose Monster flow diffuser with built-in pitot was used to measure the flow.

Dump Site Operations



Garrison Tanker 15-41 dumps its 3,500 gallons of water. It is important to note that there are no other tankers waiting to dump or dumping water.

Dump Site Operations



The dump tank arrangement was a bit unusual but was driven by the placement of a utility pole that limited the maneuvering of the larger tankers.

Dump Site Operations



The Montrose pumper was having difficulty increasing flow and a second pumper (Croton Engine 118) was brought in to operate jet siphon devices.

Dump Site Operations



Engine 118 drafted out of the 4th dump tank and supplied water to run two jet siphon transfer devices.

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Dump Site Operations



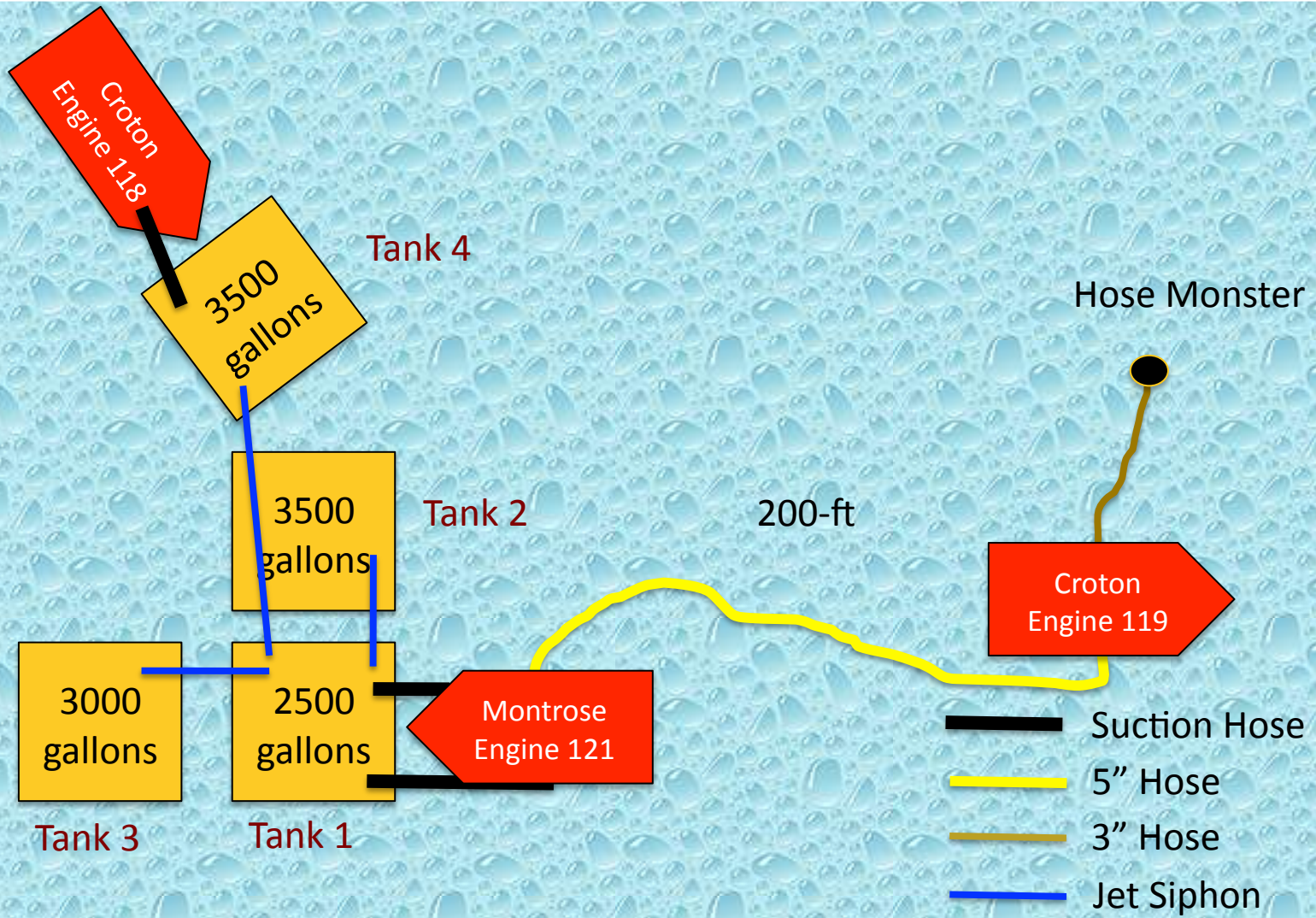
At the 63:00-minute mark, flow was moved to 1,250 gpm and the four dump tank operation was stable.

Dump Site Operations



In order to improve operation. A second suction line was set-up using the Montrose pumper's driver side suction inlet. The addition of this suction line aided in maintaining the 1,250 gpm flow.

Dump Site Layout



The Fill Sites

- For this drill – two fill sites were used.
- Both fill sites provided a 2-mile roundtrip for the units hauling water and used the Hudson River at Croton Point Park as the water source.
- The first fill site was located at a sea wall in the park about 500-feet from the main road.
- The river provided ample water volume to support the drill and access was not a problem.
- A 1,500 gpm pumper and a 2,000 gpm pumper were used to run two independent fill stations.

Fill Site Operations



FDVA Engine 225 arrived at the fill site location and laid out 500-ft of 5-inch LDH from the gate back to the river access point.

Fill Site Operations



The hose lay was an easy one and access to the river was very good as well.

Fill Site Operations



The four-person crew had the fill site operational in 7:30-minutes – an awesome job!

Fill Site Operations



A 5-way LDH manifold was the first valve used at the loading station. The problem was that there was no easy way to drain the lines when the tankers were full. Had the manifold been turned the other way before the supply line was charged, the need to make changes later would not have occurred.

Fill Site Operations



While this does not look pretty, it was very functional and crews could drain the fill lines quickly – which is the goal.

Fill Site Operations



Tankers were filled at a rate of 1,000 gpm and the supply pumper maintained a pressure of 75 psi at the manifold.

Fill Site Operations



At around the 45-minute mark, Croton Engine 120 (2,000 gpm) was put into operation as a second fill site pumper. They laid their own 5-inch supply line and set-up a second loading station.

Fill Site Operations



Both pumpers and crews worked very efficiently to support the 1250 gpm flow needed back at the dump site.

Fill Site Operations



The use of LDH and LDH appliances and fittings makes for a very effective and efficient loading operation that helps meet that 1000 gpm minimum fill rate.

The Results

- The drill was stopped at the 2:00-hour mark.
- Water flow was never interrupted!
- An estimated 113988 gallons of water were flowed through the attack engine during the drill producing an average flow rate of 989 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 dump site layout was hindered by a utility pole causing the dump tank arrangement to be altered – much like on a real incident.
- Except for the light pole, the train station parking lot 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, not every tanker had the same fill connection – which initially slowed down some of the fill operations.
- However, the use of LDH really made a big difference and most of the tankers were filled at the 1,000 gpm rate.

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

- The use of the front intake on the dump site pumper restricted the flow when a flow increase and additional jet siphons were needed.
- Fortunately, the operator was able to place a second suction into operation without shutting down the flow to the attack pumper. This is another example of the importance of a suction inlet control valve.

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 Croton-on-Hudson FD for sponsoring and hosting this seminar.



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*For more information contact us at
thebigcamel@gotbigwater.com*