Colton, New York

Rural Water Supply Operations Seminar & Drill

75-min Tanker Shuttle Drill
August 24, 2008
Summary Report

Overview

- In August of 2008 the Colton Fire District, in conjunction with the Pierrepont Fire Department (St Lawrence County, NY), sponsored a rural water supply operations seminar.
- The seminar, which was delivered by GBW Associates, LLC of Westminster, MD was a joint effort between the two fire departments to improve water supply operations.
- This presentation is a summary of the tanker shuttle drill which was part of the seminar.

The Purpose

- The purpose of the rural water supply seminar was two-fold. First, the folks at Colton and Pierrepont wanted a “refresher” on rural water supply operations and the opportunity to work together in a training environment.
- Second, the folks wanted an opportunity to improve their ability to run a tanker shuttle and operate a dump site.

The Seminar

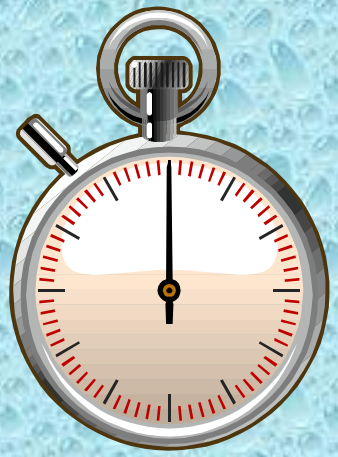
- In order to prepare for the tanker shuttle drill, participants attended a 6-hour refresher seminar on August 23rd to review the basics of rural water supply operations.
- The seminar was delivered at the Pierrepont Fire Department social hall.
- Seminar topics included the history of rural water supply, tanker construction, dump site operations, fill-site operations, tanker shuttle operations, and drafting.

The Drill

- The tanker shuttle drill was held on August 24, 2008, in Colton FD's first-due area.
- The drill replicated the 2-hour Water Supply Delivery Test used by ISO in their evaluation of fire department water supply capabilities.
- While in recent times, ISO has come under some scrutiny for its rating schedule, the ISO 2-hour test is still a reasonable standard by which fire departments can compare their water supply operations.

The ISO Test

- There are three critical time segments of the ISO 2-hour Water Supply Delivery Test:
  - 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, 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 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!

Colton Drill Participants

The participants for the drill were from three different fire departments and were representative of the type of water supply support that would respond to a fire in the Colton FD response area.

Drill Participants

- Colton Engine 10
  - 1250 gpm pump w/1000 gal tank

- Colton Engine 81
  - 1000 gpm pump w/1000 gal tank

Drill Participants

- Colton Tanker 4
  - 1800 gal tank
  - 350 gpm PTO pump

- Colton Tanker 88
  - 1800 gal tank
  - 350 gpm PTO pump

Drill Participants

- Pierrepont Engine 65
  - 1250 gpm pump w/ 1000 gal tank

- Pierrepont Engine 47
  - 1000 gpm pump w/ 1500 gal tank

Drill Participants

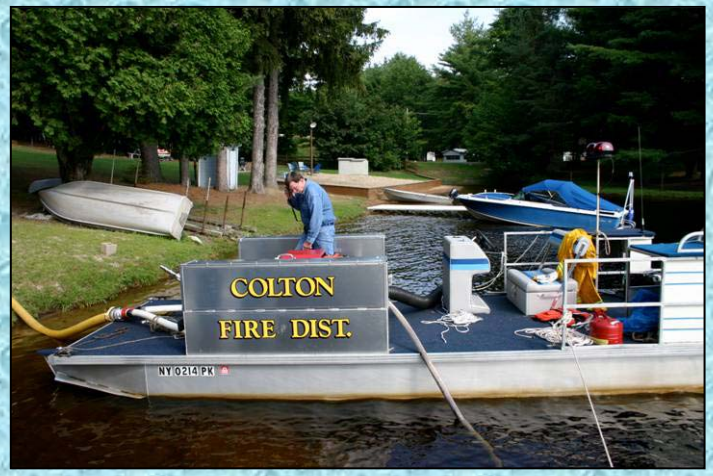
- Pierrepont Tanker 35
  - 1800 gal tank w/500 gpm pump

- Hopkinton Engine 61
  - 1500 gpm pump w/750 gal tank

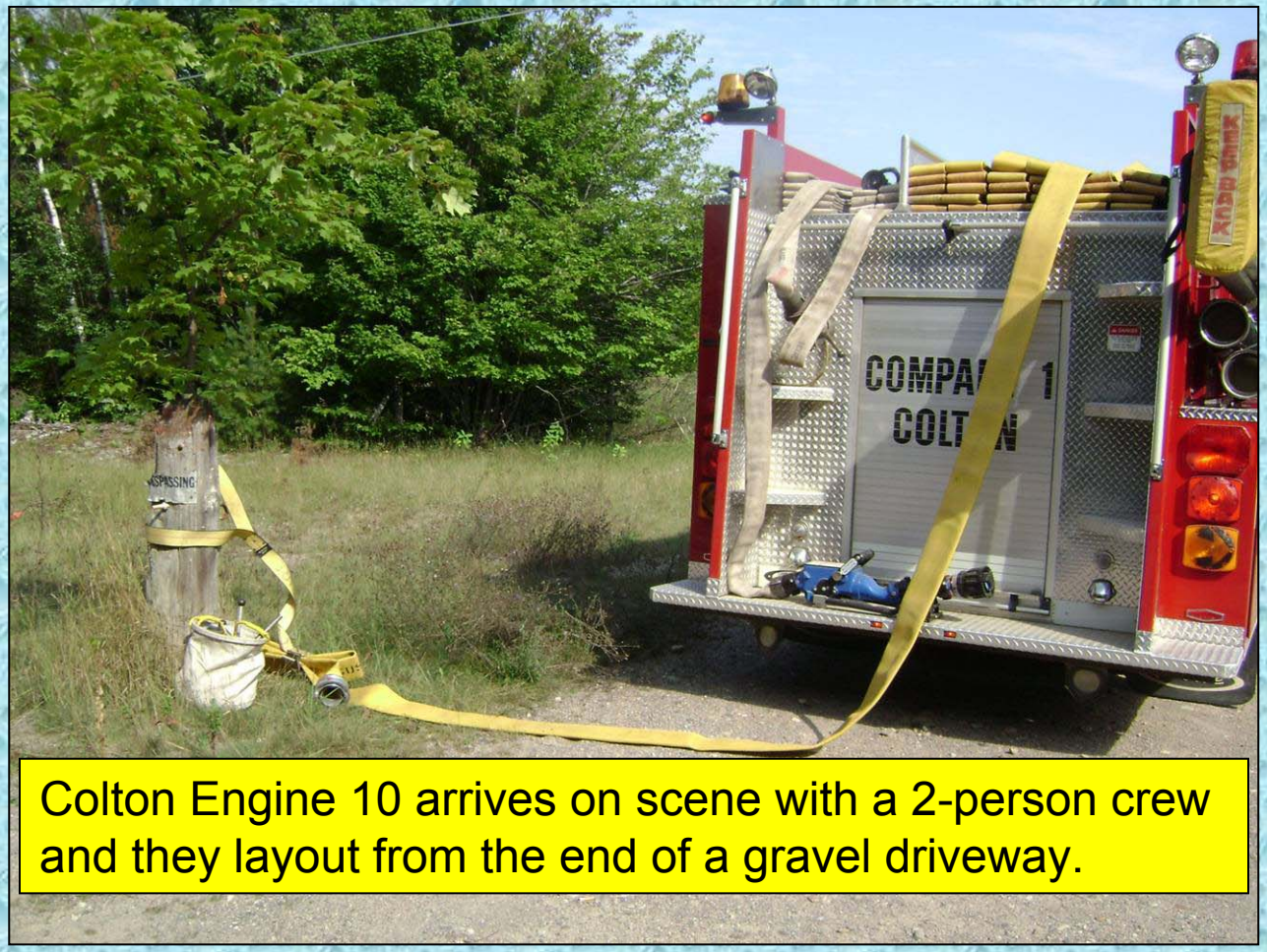
Drill Participants

- Hopkinton Engine Tanker 44
  - 1500 gpm pump w/2200 gal tank

- Colton Fire Boat
  - 600 gpm pump

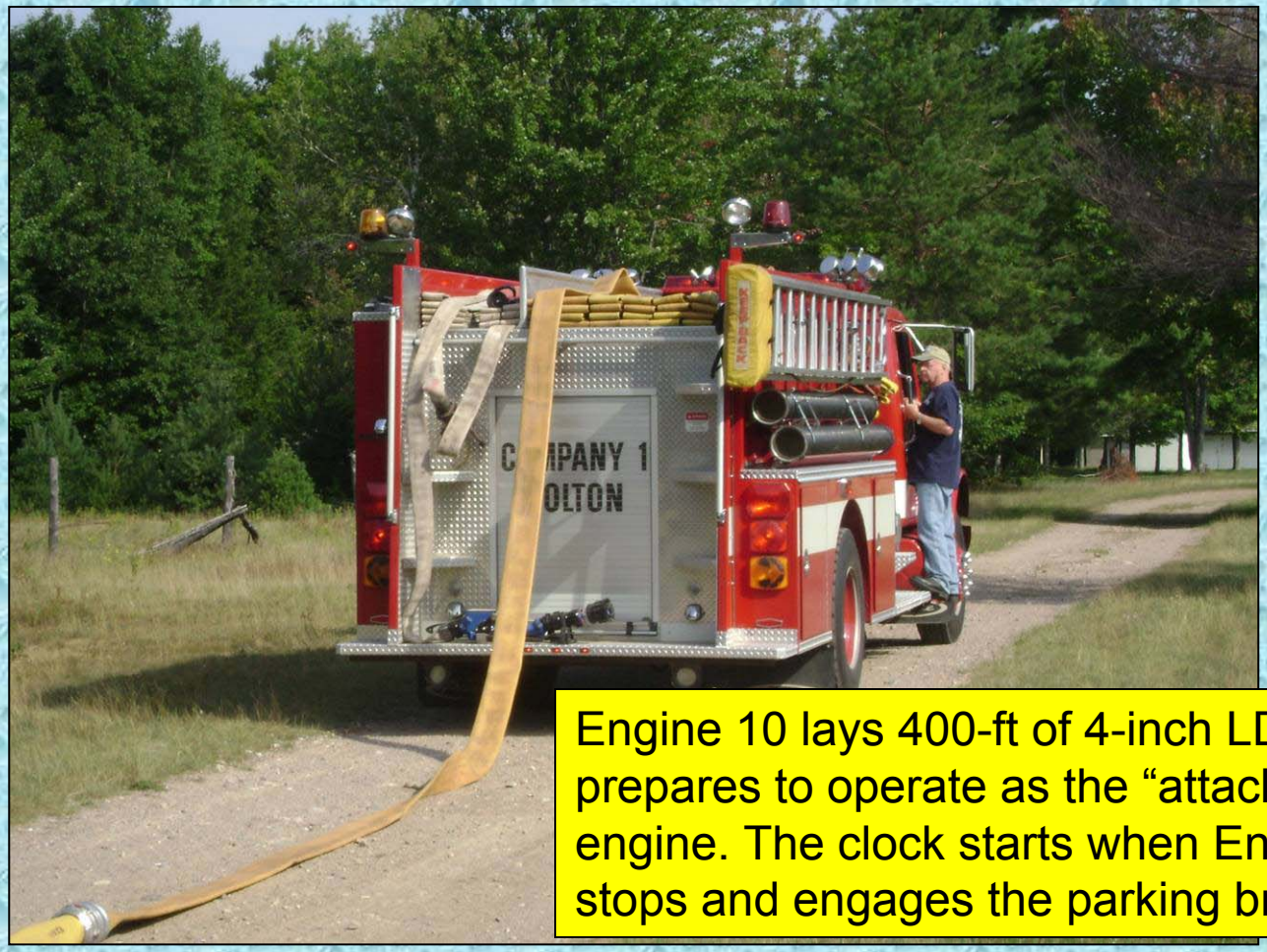


The Drill Begins



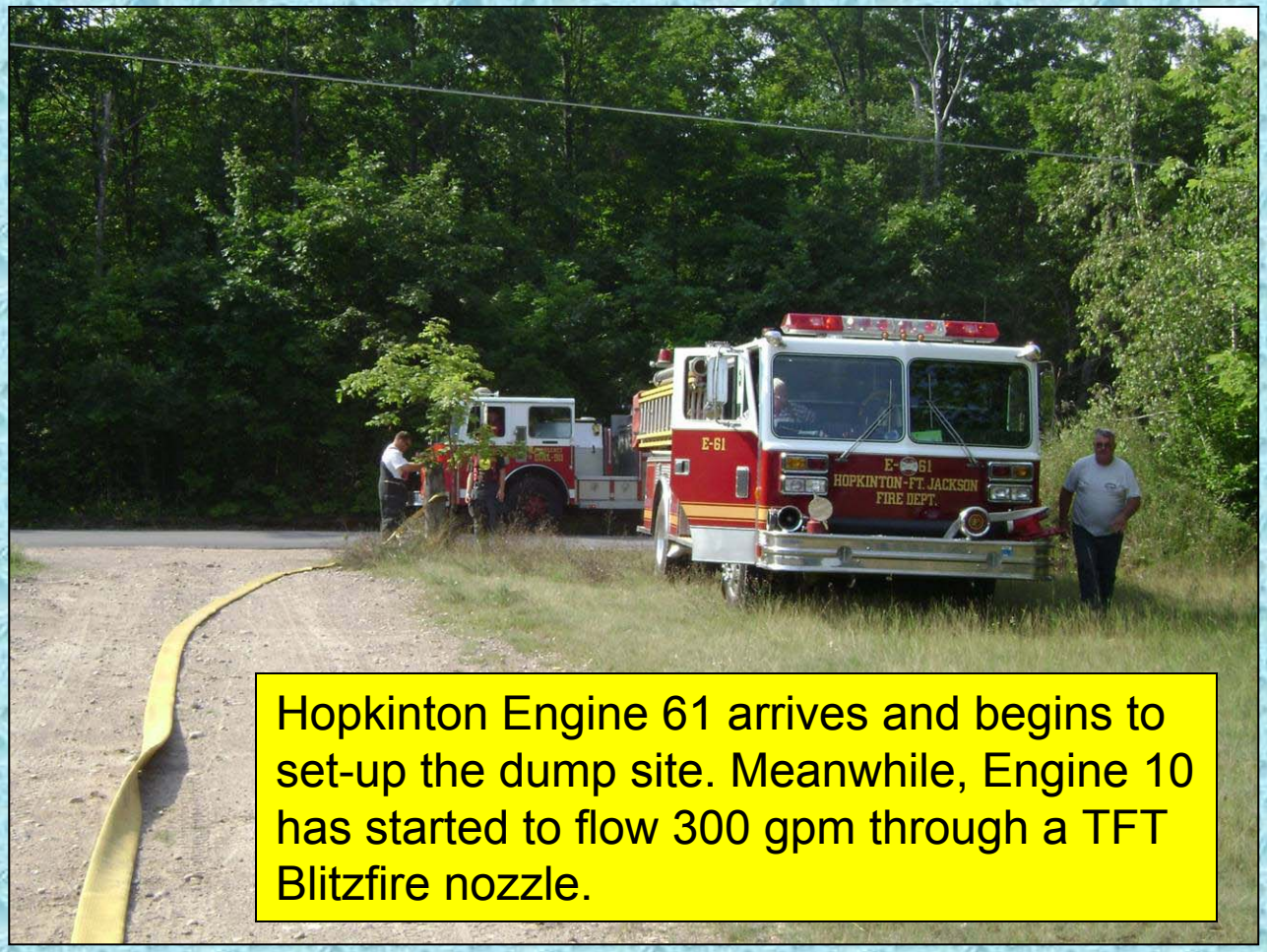
Colton Engine 10 arrives on scene with a 2-person crew and they layout from the end of a gravel driveway.

Laying a Supply Line



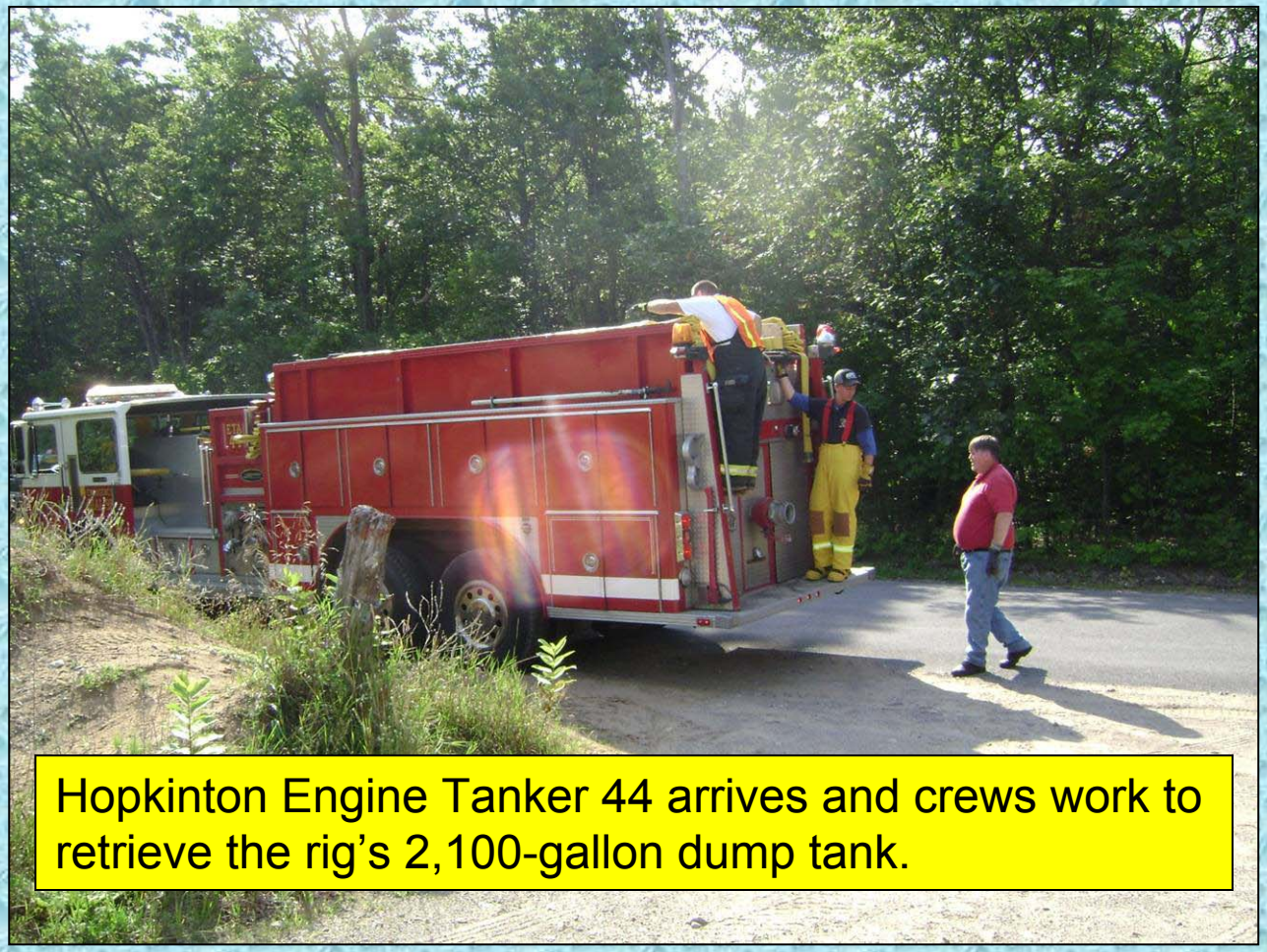
Engine 10 lays 400-ft of 4-inch LDH and prepares to operate as the “attack” engine. The clock starts when Engine 10 stops and engages the parking brake.

Dump Site Engine Arrives



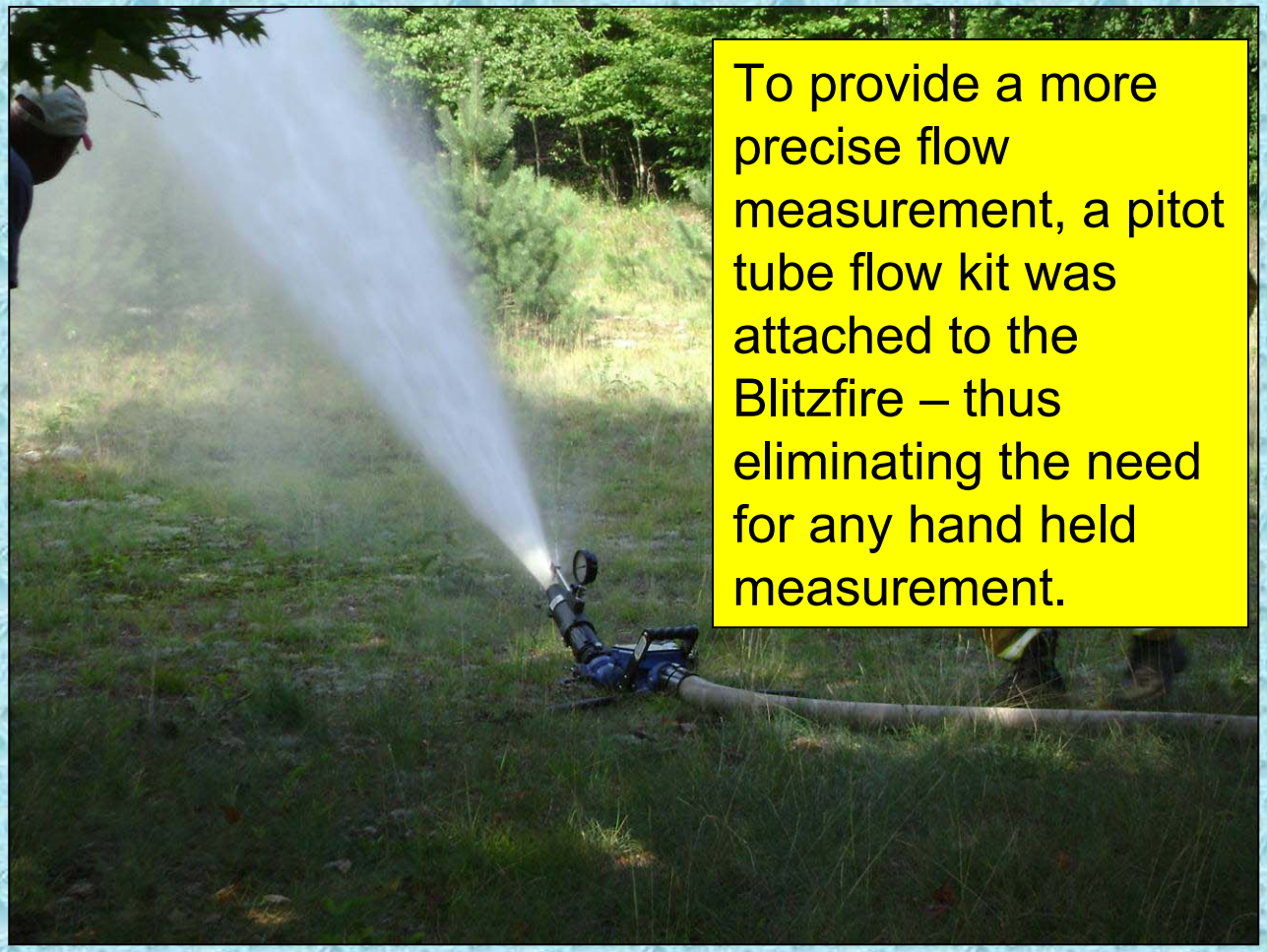
Hopkinton Engine 61 arrives and begins to set-up the dump site. Meanwhile, Engine 10 has started to flow 300 gpm through a TFT Blitzfire nozzle.

1st Tanker Arrives



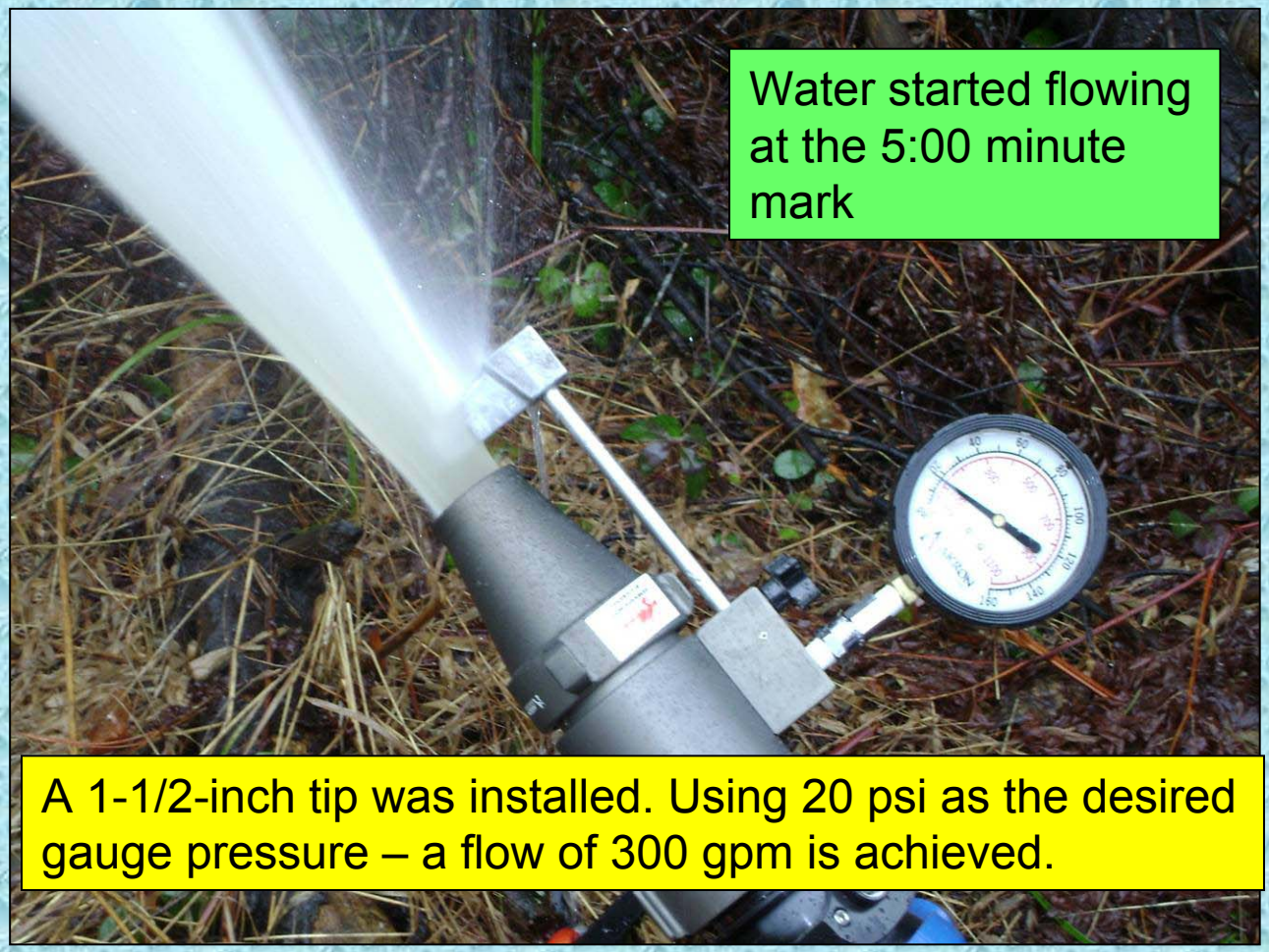
Hopkinton Engine Tanker 44 arrives and crews work to retrieve the rig's 2,100-gallon dump tank.

Flow Measurement



To provide a more precise flow measurement, a pitot tube flow kit was attached to the Blitzfire – thus eliminating the need for any hand held measurement.

Flow Measurement



Dump Site Set-up

With water now flowing, additional firefighters arrive and the first dump tank (2,100-gallon) is set-up.

Dump Site Set-up

The crew works here to prepare Engine 61 for drafting out of the dump tank - they elect to use the engine's front suction.

Dump Site Set-up

The fellow in the orange vest is Chief Kevin LaBrake (Pierrepont FD) who assumed the Water Supply ICS position. Engine 61 is now being supplied by Pierrepont Tanker 35 and is in-turn supplying Engine 10 through the LDH supply line. A draft has not yet been attained.

3rd Tanker Arrives

Colton Tanker 4 arrives and crews work to remove its 2,000 gallon dump tank.

Set-up Continues

Tanker 4 off-loads through its rear 10-inch dump into the first dump tank as Engine 61 obtains a draft.

Transition

Engine 61 transitions from being supplied by Engine 47 to drafting from the dump tank. The “experienced” operator of this rig made this transition run smoothly.

Low-Level Strainer Use

The first dump tank is made operational. The use of this low level strainer will allow maximum use of the water in the tank.

Tanker 35 Operates in the Nurse-mode

With water being used faster than tankers can supply it, Tanker 35 operates in the “nurse-mode” and supports Engine 61 when the dump tank gets low.

2nd Dump Tank Placed into Operation

Colton Engine 81 offloads its 1,000 gallons into a second dump tank (2,000 gallon) as the crews try to build out the dump site.

Jet Siphon Placed Into Service

Engine 61 begins to transfer water between the two dump tanks using a jet siphon and a 6-inch hard sleeve.

Keeping Busy

Engine 61's operator is kept pretty busy shifting between taking in water from Tanker 35 and drafting from the dump tanks in order to supply the attack pumper. At 23:00 minutes, the dump tanks are empty and no tankers are in place to dump.

More Water Arrives

At the 26:00 minute mark, tankers begin to arrive back from the fill sites and line-up to dump.

Flow is Increased

With the second dump tank operational, the flow is increased to 500 gpm at the 40:00 minute mark. However, crews continued to struggle to support the flow as it seemed that water was being used as fast as it was being dumped.

A 3rd Dump Tank is Attempted

As Engine Tanker 44 dumps another load of water, a 3rd dump tank is placed out on the main road in an attempt to have some of the tankers dump off of their side instead of their rear. However, the flow did not allow a break in the action so that the tank could be made operational.

Dump Tube

Engine Tanker 44 leaves the dump site with its dump tube dragging. This is one of the problems with rear dump “only” rigs. This cam lock tube could have been tied up so that it is ready to go when the rig returns to dump.

Engine 47 Returns

Pierrepont Engine 47 quickly off-loads its 1,500 gallons through its 7-inch rear dump.

Portable Pump

A portable pump was taken from one of the Colton tankers with hopes of using it to run a jet siphon for the third dump tank, but the tank was never placed into operation.

2nd Jet Siphon Put Into Operation

Engine 61 puts a second jet siphon into service which really helped sustain the flow.

Tanker 35 in the Shuttle

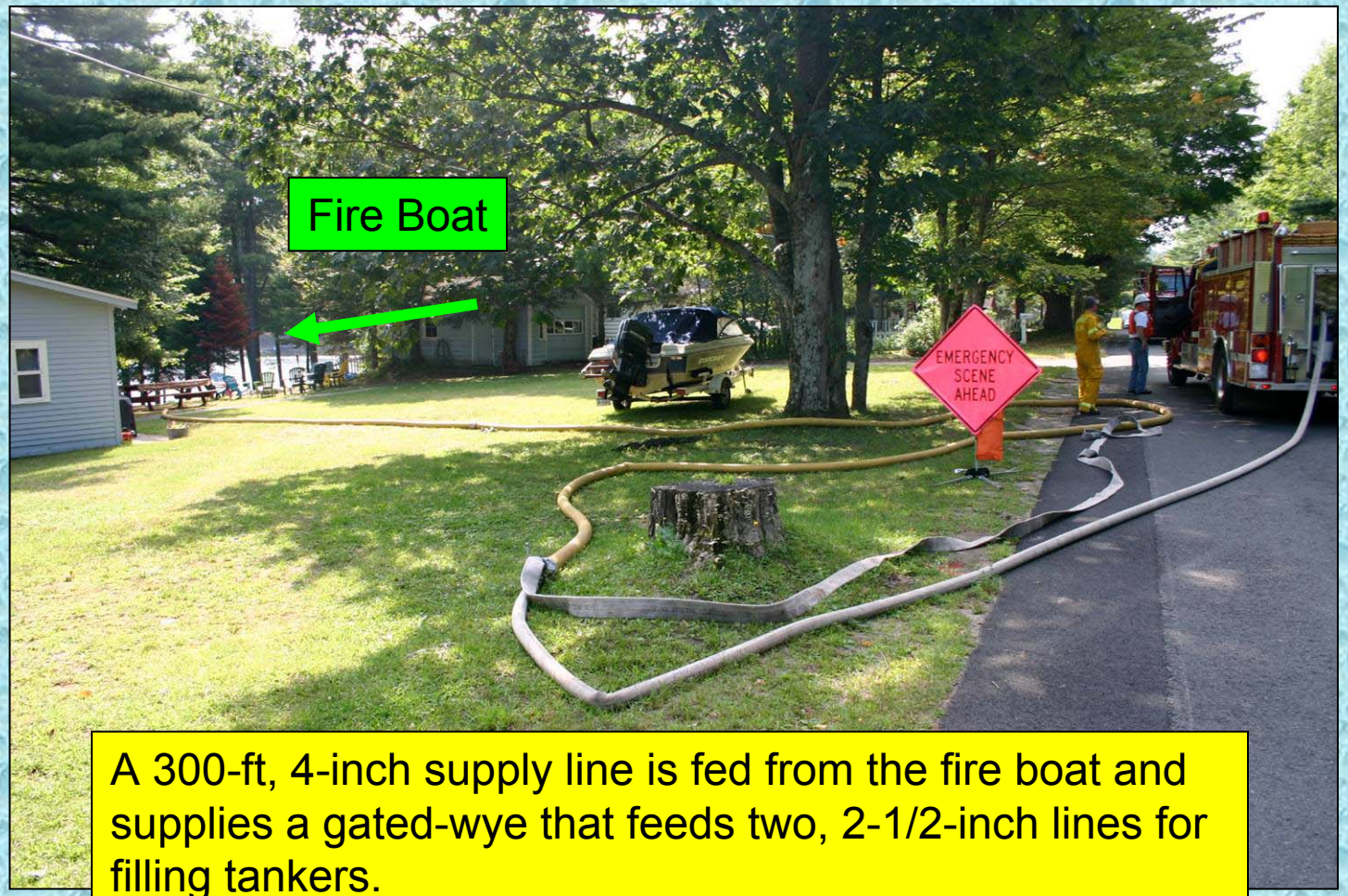
With the dump site operational, Tanker 35 switches from the nurse-mode to the “dump and run” mode. Here, a flexible tube with a cam lock fitting is used to direct the offload stream.

The Fill Sites

- Two fill sites were used for the drill; a lake and a stream.
- The lake was the closest fill site and was supported by Colton FD's fire boat. The fire boat provided an excellent water supply by overcoming the lift that a traditional pumper could not have handled.
- The stream fill site was a simple drafting operation off of the side of a local bridge. It too was an excellent source of water.

Gulf Road Fill Site

Gulf Road Fill Site



A 300-ft, 4-inch supply line is fed from the fire boat and supplies a gated-wye that feeds two, 2-1/2-inch lines for filling tankers.

Colton Engine 85 Loads Up

Engine 81 gets filled by the fire boat via a single, 2-1/2-inch hose line. Ideally, this direct fill line should be larger or 4-inch hose should be used to fill this tanker.

Tanker 35 Fills at Gulf Road

Some changes were made to the LDH Gulf Road fill set-up and Tanker 35 uses 4-inch hose to connect to its direct fill.

Brown Road Fill Site

Pierrepont Engine 65 drafts from a stream through 20-ft of suction hose and fills tankers.

Brown Road Fill Site

A floating strainer is used at this fill site due to the amount of aquatic vegetation.

Brown Road Fill Site

Small, Direct Fill Lines Hamper Fill Operations

All of the tankers attending this drill had small, direct fill lines which hampered their ability to load. If the fill piping cannot be made larger (4–inch or bigger), then at least 4-inch LDH should be used to fill the rig.

The Results

- The drill was stopped after 75-minutes when the shuttle operation “stabilized”. It was stopped because the crews wanted to have time to conduct some tanker fill testing.
- ***Water flow was never interrupted at the attack engine***, however, the dump site worked feverously to keep water moving to the attack engine.
- Several times during the drill, the dump tanks were empty and the nurse tanker or the attack and dump site engines had to rely on their booster tank water to keep the operation going.
- A total of 33,310 gallons were moved during the 70-minute event (first 5-minutes no water was moved) resulting in an ***average flow of 475 gpm***.

Lessons Learned

- Many people and water transport rigs were used to deliver the 475 gpm for the duration of this drill – emphasizing the need to call for help early in an incident.
- When setting up a dump site, it is important to support the fire attack by pumping water to attack engine while the dump tanks are set up.
- When setting up multiple dump tanks – take into consideration the layout and the need to accommodate rear offloading tankers.

Lessons Learned

- Side dumps in addition to rear dumps provide greater flexibility in tanker offloading operations.
- Designating a Dump Site Leader (officer) to direct dump site operations helps make things go smoother.
- The use of jet siphons improves the transfer of water between dump tanks and dedicating one person to operate the jet siphons makes matters even better.

Lessons Learned

- Jet siphons consume pump capacity; consider using a separate pumper to run jet siphons when attempting flows approaching 1000 gpm.
- All size tankers can contribute to the overall delivery rate – some will just be more efficient in the process than others.

Lessons Learned

- Small fill lines slow down tanker fill operations. Even if a tanker has a 2-1/2-inch direct fill connection – use an adaptor and connect LDH to that connection.
- Threaded connections slow down fill site operations – consider using Storz-style fittings.
- Adaptors are critical – every tanker should carry multiple adaptors so that they can support all types of fill scenarios.

Summary

- The drill was a success. It showed the value of equipment interoperability and identified a couple areas of weakness where improvement can be made.
- All of the crews worked very well together and all of the apparatus proved capable of dumping water – filling however needed some improvement. If every tanker could have filled faster then more trips could have been made and thus – a higher average flow could have been achieved.
- Many thanks to the Colton Fire District for sponsoring the program and to all of the fire departments who provided support to the seminar.

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