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Monadnock Area Fire Chief's Association
Fitzwilliam, New Hampshire

Rural Water Supply Operations Seminar
2-hr Water Supply Drill
May 5, 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

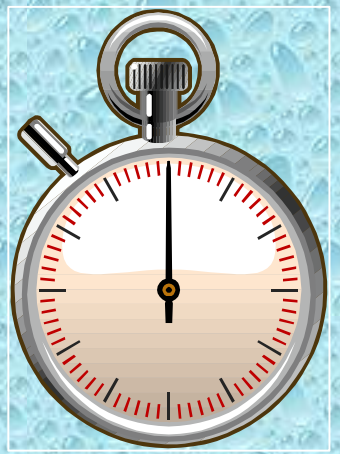
- The 2-day seminar started on Saturday with a 4-hour classroom session to review the basics of rural water supply operations.
- The review session was held at the Meadowood Fire Training Center.
- Once the classroom part was done, the seminar continued with several hours of practical work on fill-site and dump site operations.
- The program concluded on Sunday with the 2-hr ISO tanker shuttle exercise and program review.
- Seminar participants were from Monadnock Area Fire Chiefs' Association and surrounding departments.

The 2-hour Water Supply Drill

- The tanker shuttle drill was held on May 5th in Rindge, NH at a small, retail center.
- 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 eighteen 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 Monadnock Area.*

A Change in Plans

Before folks could be assembled for Sunday's session, a 4-alarm barn fire occurred in nearby Peterborough and at least half of the class had to go help haul water – kind of like a field trip.

Preparation

The remaining units staged at a State highway maintenance facility near Rindge where they were prepared for dispatch.

The Drill Begins

Milford Engine 1 arrived on the scene first and laid a 300-ft, 4-inch supply line. Rindge's Hose Reel Pumper (1,000 gpm) was the next unit to arrive and positioned to operate as the dump site pumper because the other pumpers were on the barn fire. The stopwatch was started when the Milford engine engaged its parking break.

The Drill Begins

The four-person engine crew hustled to stretch a 4-inch supply line to a Hose Monster flow measuring device and be ready to flow water at the 5-minute mark.

1st Tanker Arrives

Sullivan 32-Tanker-1 was the first tanker to arrive. While crews worked to establish a dump tank operation – the plan was to use a "rural hitch" nurse tanker operation until a dump site could be established.

Nurse Tanker Operations

The rural hitch operation is an easy way to allow a tanker to pump off its water and support the fire attack during the early phase of a rural water supply operation.

Water Flow Begins

At the 5-minute mark, water flow was started by the Milford pumper. A Hose Monster flow diffuser with built-in pitot was used to measure flow.

Nurse Tanker Operations

At the 7:02-minute mark, nurse tanker operations were well underway with the Sullivan tanker supplying the Milford attack pumper.

Dump Site Operations

The dump site pumper positioned so that the front-mounted pump could be used as efficiently as possible.

Dump Site Operations

With the first dump tank all set up and ready, the first load of water was offloaded. Meanwhile, nurse tanker operations continued until the dump site pumper obtained a draft.

Incident Command

Chief Patricia Lamothe of the Stoddard FD assumed the role of the Water Supply Officer and began coordinating the dump site operation.

Dump Site Operations

Dump tank operations were now underway and the nurse tanker was returned to water hauling operations. 27-Tanker-1 was the next arriving tanker and dumped its water.

Dump Site Operations

At around the 15-minute mark, a second dump tank was set up and made ready for operation. Meanwhile, the flow was moved to 533 gpm.

A Leak

There were a couple of leaky LDH appliances found at this drill. Most of the leaks dealt with sand and grit preventing the complete closure of a valve. It is important to thoroughly clean and rinse these devices after each use.

Dump Site Operations

One of the challenges of the drill was the 1,000 gpm pump capacity on the Rindge hose reel pumper. At one point, plans included the use of Temple Tanker 1 as a pumper so that jet siphons could be supplied without using the Rindge unit.

Water Transfer Operations

Water transfer operations are critical in all dump site operations. The crews are shown here setting up a low level suction strainer as a water transfer device.

Dump Site Operations

Around the 30:00-minute mark, three dump tanks were in operation – however, the number of tankers was limited and flow was restricted. Note the photo shown here – there are no tankers dumping water or waiting to dump water.

Dump Site Operations

As tankers cleared the barn fire, they joined the shuttle operation. The additional tankers brought stabilization to the water flow.

Dump Site Operations

As more tankers arrived, plans got underway to increase the flow.

Dump Site Operations

At the 1-hr mark, the 500-gpm flow rate was clearly obtainable using the three-dump tank set up and the 1,000 gpm pumper.

Dump Site Operations

At 70-minutes into the drill, all three dump tanks were nearly full and the water transfer operations were keeping up with the demand.

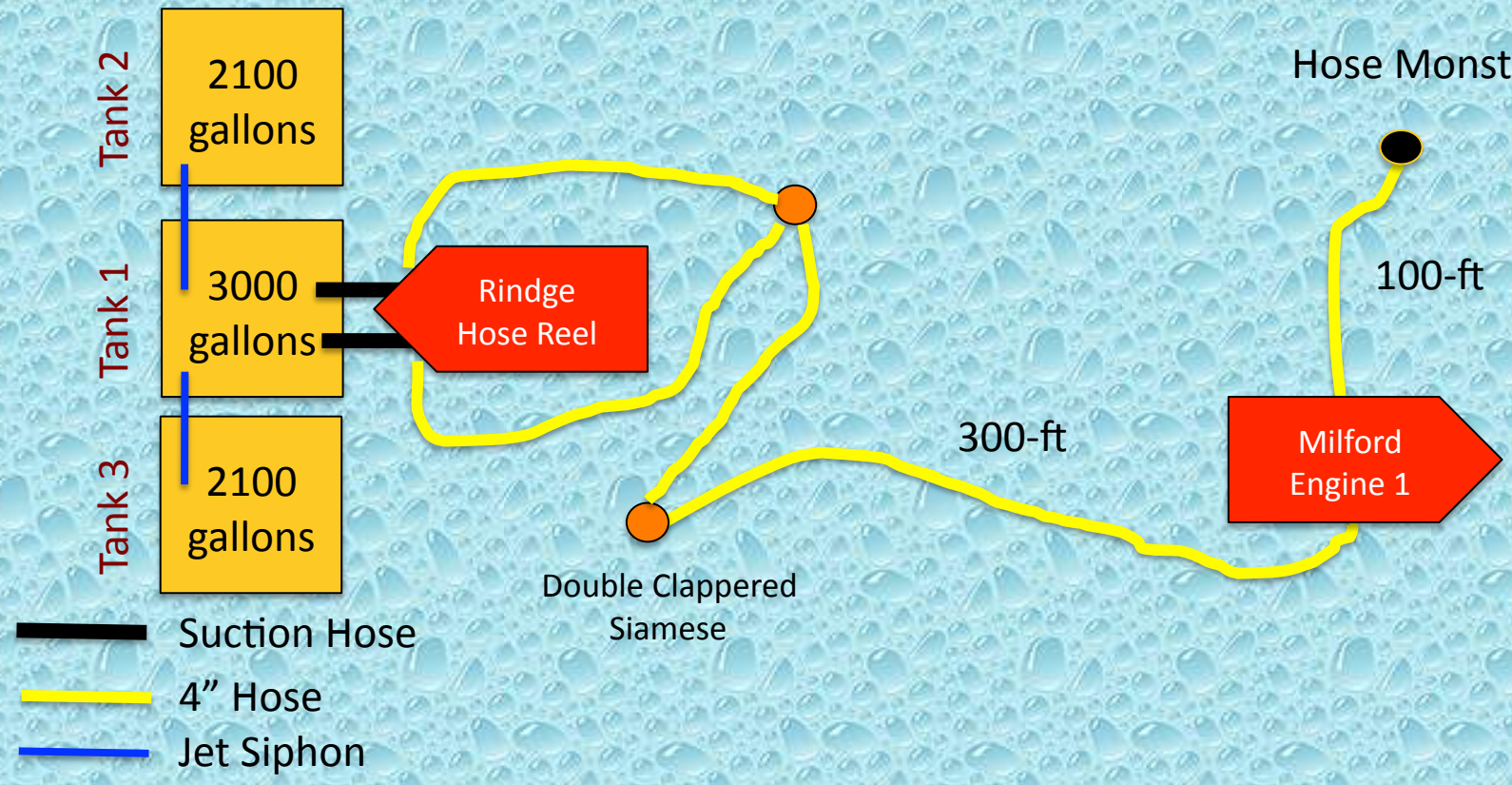
Dump Site Operations

With five tankers either dumping or waiting to dump their water, the flow was increased to 750 gpm at the 79:00-minute mark.

Maximizing Water Intake

In a final step to maximize flow, dual suctions were used on the front mount pump and the flow was moved to 1,000 gpm plus jet siphons.

Dump Site Layout



The Fill Sites

- For this drill – three fill sites were used.
- All three fill sites used a pond as the water source.
- The first fill site was located in a residential area on W. Main Street. The pond was equipped with a dry fire hydrant but the crew chose to use a traditional drafting operation.
- The pond 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.

W. Main Street Fill Site

Washington Engine 3 was first pumper to establish a fill site and the crew worked hard to have the site ready for when the first empty tanker arrived.

W. Main Street Fill Site

The crew elected to use a traditional drafting operation in lieu of using the dry fire hydrant. They used several lengths of 6" suction hose plus a barrel strainer.

W. Main Street Fill Site

The tanker loading station was set up using 4-inch LDH and an LDH manifold. The use of LDH almost always improves tanker loading times.

W. Main Street Fill Site

The LDH supply line to the manifold was supplied via the pumper's high-flow discharge. The pumper's deck gun was used as a circulating line in between loading tankers.

W. Main Street Fill Site

The fill site crew worked hard to fill tankers at a rate of at least 1,000 gpm. Temple's tanker is shown here being filled using its rear direct fill inlet.

W. Main Street Fill Site

One issue that arose early in the operation was that this fill site was the only fill site in operation and tanker route travel varied. This resulted in the need for some control over the travel routes.

W. Main Street Fill Site

Traffic cones were used to create a staging area for empty tankers and the travel route was communicated to all tanker drivers via radio.

W. Main Street Fill Site

Once the travel and staging issues were handled – this fill site operation stabilized and fill times became very consistent.

Grassy Pond Fill Site

The second fill site was located at Grassy Pond and provided a 2.8-mile round trip for tankers hauling water. Jaffrey FD's hose reel pumper was used as the source pumper for this operation. Its front mount pump made for easy access to the water.

Grassy Pond Fill Site

The loading crew used 4-inch hose and an LDH manifold to load tankers. The crew is shown here loading Jaffrey's tanker.

Crowcroft Pond Fill Site

The third fill site was located at Crowcroft Pond which provided a 1.2-mile roundtrip for tankers hauling water. Temple's tanker was relocated from the dump site to this pond with the instruction to set-up to draft and fill tankers. The crew used a 6-inch dry fire hydrant at the pond.

Crowcroft Pond Fill Site

Temple 50-Tanker-1 with its 1,000 gpm pump did a respectable job of drafting and filling tankers. Its two-person crew did a good job of making and breaking connections and getting tankers loaded as quickly as possible.

Crowcroft Pond Fill Site

This photo is a good example of why it is important to design tankers with low, direct fill lines. Valuable time was lost making and breaking this connection.

The Results

- The drill was stopped at the 2:00-hour mark.
- Water flow was only interrupted once around the 8:40-minute mark due to a slight delay in getting nurse tanker operations established. However, water flow was restored in about a minute.
- An estimated 74,612 gallons of water were flowed through the attack engine during the drill producing an average flow rate of 654 gpm.

The Lessons Learned

- Because of the barn fire, the resources used at this drill were not the ones originally outlined in the plan. However, everyone overcame obstacles and were successful in reaching a peak flow of 1,000 gpm.
- The use of the 1,000 gpm Rindge hose reel pumper at the dump site challenged the folks running the site – especially in the area of supporting jet siphon operations.
- However, the pumper worked out just fine – although it got quite a workout!
- The 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, every fill line had a 4-inch Storz 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 - including any adaptors needed to make those devices work.
- 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 pipe thread on 1-1/2-inch and 1-3/4-inch hose caused problems in terms of needing adaptors for jet siphons. All threaded fire hose should use National Standard Thread.
- The use of the rural hitch in the early minutes of the operation made a big difference in terms of a sustained water flow. However, it is important to remember that "speed" is of importance during the initial set-up of the hitch operation.

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 Monadnock Area Fire Chief's Association for sponsoring and hosting this seminar.

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This program was developed by
GBW Associates, LLC

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