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Report of the Week

**Clogged nozzles call for clear thinking.
2/11/10**

Report Number: 09-0001028

Report Date: 11/19/2009 19:11

Synopsis

Tank sealant failure results in clogged nozzles.

Demographics

Department type: Combination, Mostly paid

Job or rank: Driver / Engineer

Department shift: 24 hours on - 24 hours off (4s & 6s)

Age: 34 - 42

Years of fire service experience: 11 - 13

Region: FEMA Region V

Service Area: Urban

Event Information

Event type: Fire emergency event: structure fire, vehicle fire, wildland fire, etc.

Event date and time: 12/10/2006 18:01

Hours into the shift:

Event participation: Involved in the event

Weather at time of event: Cloudy and Dry

Do you think this will happen again?

What were the contributing factors?

- Equipment

What do you believe is the loss potential?

- Life threatening injury
- Property damage

Event Description

We were dispatched and responded to a report of a vehicle fire in a two-stall attached garage. Upon arrival of the first due engine, the engine officer established command and made a report of a mini-van fire inside the attached garage. The bulk of the fire was under the hood with some damage to the garage drywall and some smoke in the house.

A two-man crew stretched a pre-connected 1-3/4" hose line with an adjustable nozzle to extinguish the fire. They entered the garage through the large garage door, which was already open. They were never out of sight of the engine and visibility was good. Shortly after starting the fire attack, the hose crew started calling for more pressure. As the equipment operator, I increased the pressure about 15 psi and waited for feedback. The attack crew again called for more pressure and I increased the pressure again. This happened a couple more times until the calls for pressure became more emotional and it was reported back to me that the attack crew was barely getting any water. At that time, I double

checked all the gauges on the engine, which indicated plenty of pressure. I then followed the hoseline and could find no kinks and the line was very hard from the pressure. I decided there must be a problem with the nozzle and then pulled another pre-connected 1-3/4" hoseline with an adjustable nozzle and handed it off to the fire attack crew.

Shortly thereafter, the attack crew reported the same problem, low pressure or no water coming from the tip. I again checked all the gauges and then walked the line, again no problems found. As extremely improbable as it seemed, I had to assume there was a problem with the second nozzle. At that time, I removed the adjustable nozzle from the first 1-3/4" line and attached a smoothbore tip to that line. It was handed off to the attack crew and they extinguished the fire without further incident. Upon inspection of the first malfunctioning tip, we found that small pieces of hard black rubber had entirely plugged the nozzle from the screen to the discharge. We made the same discovery when examining the second malfunctioning tip. The next day, the adjustable nozzles were disassembled, cleaned, then reassembled and placed back into service.

Lessons Learned

As unlikely as it may seem, when you have ruled out the probable causes of a problem, the improbable may just become the answer. I would never have expected to have two nozzles fail at the same time.

Our pre-connected 1-3/4" lines have adjustable nozzles on them and have been very reliable. However, they did not function when subjected to foreign material trying to pass through. We keep smooth bore tips on our engines as well and they came in handy for this situation. We were lucky that this was not a fire requiring a more aggressive interior type of attack. A water failure in that sort of situation could be disastrous for the attack crew.

In this instance, the attack crew in the garage was never out of sight of the engine and was able to walk in and out at will. Sometimes events happen that are obviously not expected and cannot be planned for. During such times, it is important to keep your wits about you and think outside the box. There was potential to panic when two hose lines failed, but the engine crew "kept it together" and worked through the situation. It was determined that the hard black rubber which had plugged our nozzles was the sealant that had been used around the water fill on the top of the fire engine. Apparently, the sealant had broken free, fallen into the water tank, and was chopped up into small pieces in the pump. The pieces then found their way into the adjustable nozzles where they could not pass through and hence cut off the water flow.

The next day, our department back flushed the pumps on our engine to ensure it was clear of any more debris. We also removed the rest of the sealant from around the water fill and installed a screen on top with smaller holes to make sure this would not happen again.

Discussion Questions

Re-establishing a dependable water flow quickly is of the utmost importance. This responsibility usually falls on the FAO. The experience related by the individual involved in this week's report is a great example of how keeping an open mind and following procedures can result in a favorable outcome when

seconds count. How are the FAOs in your department trained to react when the water stops flowing unexpectedly? Once you have read the entire account of [09-1028](#) and the related reports, consider the following:

1. What are some of the most common causes of obstructed hoselines?
2. Does your department include troubleshooting water flow problems in the training of FAOs?
3. What is the best course of action when you find yourself inside a structure fire with no water pressure?
4. What are some ways to help prevent clogged pumps and nozzles?
5. Are backup lines routinely included in the firefighting tactics of your department?

Related Reports - Topical Relation: Losing Water Pressure.

[05-197](#) [05-379](#) [06-469](#) [07-864](#) [09-998](#)

Note: The questions posed by the reviewers are designed to generate discussion and thought in the name of promoting firefighter safety. They are not intended to pass judgment on the actions and performance of individuals in the reports.