



Think Safety!

A Publication Of The West Virginia Propane Gas Association

Winter 2016

Safe And Economic Propane Delivery

The winter has been milder than we might hope so far, but there are some indications that winter may arrive this year after all.

As deliveries pick up, it is important to remember safety procedures to keep both the customers and the employees safe.

A safe delivery begins before the driver even leaves the plant. He first must make sure he has the proper equipment and that it and his bobtail are working properly.

Once he or she arrives at the scene, the driver must make sure the tank is safe to fill and that all of the safety precautions are taken in filling the tank.

In this issue of *Think Safety*, we will highlight some safe practices in propane delivery including how to proceed in the event of an out-of-gas call.

We will also discuss ways to help make the bobtails rolling down the road the most fuel efficient possible.



Before You Leave The Plant:

Before you start your engine, there are several things that can be done to keep you and others safe while driving in

inclement weather.

Inspect your vehicle. Problems with your vehicle tend to reveal themselves when the

temperature falls.

- Make sure your brakes are in good working condition.
- Check for tread wear on your tires, and make sure they are inflated to the proper air pressure. **Deflated tires will not give you extra traction.**
- Check your windshield wipers and make sure you have plenty of washer fluid. The mixture of road salt, moisture and road grime can greatly reduce the visibility through your windshield at a time when visibility is critical.
- Check your antifreeze

regularly and make sure it is at adequate temperature protection. Your cooling system should be flushed periodically to help avoid overheating problems. True, you will be driving in colder temperatures, but when the roads are bad you are more likely to be driving at slower speeds, which reduce the effect of air-cooling.

- Keep your fuel tank as full as possible to avoid fuel-line freeze-up and provide extra weight for lighter vehicles.

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Before You Leave The Plant:

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- Keep your headlights, tail-lights, and windows clear of snow and ice so that you can see and be seen.
- Dress warmly. Layered clothing is better than just a heavy coat. If you have a cell phone, make sure it is fully charged. Keep a “care package” in your vehicle. Include a snow shovel, a blanket, warm gloves, flashlight and batteries, and some non-perishable snacks. Keep in mind. Though you might only be a few miles from the plant, in extreme conditions you could be stranded for a lengthy time.
- Always allow extra time to reach your destination.
- Make sure someone knows where you are going and by what route.
- Always know the weather and road conditions before you get on the road. Bobtails must be inspected

daily for any leak that would be detectable without the use of leak detection devices. These inspections should be documented **each and every** time they are performed.

A DOT qualified employee must perform tests and repairs to hoses. The employee should complete a training class and receive a Certified Tester number.

The bobtail driver should visually inspect the portion of the hose unwound after each delivery. This inspection should also be documented.

Monthly, the driver should also inspect the hose assembly and piping system. This inspection should of course be documented.

An annual leakage test should be performed on any hose assembly not permanently mounted on a bobtail. A record must be kept of the testing.

In any of the situations above, a hose showing the following type of damage should be rejected and replaced:



Winter Weather Precautions

Check Your Brakes

Check Your Tires

Check Your Windshield Wipers

Check Your Antifreeze

Fill Your Fuel Tank

Clean Your Headlights

Dress Warmly

Allow Extra Time To Destination

Inform Someone Of Your Route

Know The Weather Conditions

- Damage to the hose cover that exposes reinforcement
 - Kinking or flattening that permanently deforms the wire braid reinforcement
 - Soft spots present while the hose is not under pressure
 - Bulging while the hose is under pressure
 - Loose outer covering
- Any hose coupling should be rejected that displays damaged, slipping, or excessively worn hose couplings.

Fuel Economy:

Large vehicles and frequent starts and stops don't provide the best formula for great fuel economy. To make matters worse, winter weather and driving conditions lead to reduced fuel economy. Temperatures lower than 20 degrees can reduce fuel mileage by as much as 12 percent.

Several factors contribute to the reduced fuel mileage including:

Cold engine oil and other motor fluids lead to increased engine and transmission fric-

tion.

It takes longer for your engine to reach its fuel-efficient temperature. This is even more of a problem if the deliveries are close together and the engine doesn't have time to warm up between stops.

Components such as defroster and heater fans use additional power.

Colder air is denser which creates additional drag.

Tire pressure decreases in colder temperatures, which reduces economy.

Batteries don't like colder temperatures, which works your alternator harder to keep your battery charged.

Mileage can be reduced even more when typical winter weather becomes extreme. Icy roads, for instance, can reduce your mileage because of less traction, which wastes energy. Slower driving can reduce mileage as well especially at speeds of 30 or 40 mph.

While you can't change the weather you can take steps to

increase winter mileage including the following:

Park your vehicle in a garage or covered area, if possible. This will reduce the time needed to increase the engine temperature.

Minimize idling of the vehicle. The engine will warm up faster while driving.

Check your tire pressure regularly.

Use the type of engine oil recommended for colder temperatures

Leak Tests:

Out-of-gas calls, it seems, are an almost inevitable part of deliveries. As long as you sell propane, it seems there will always be that customer who pushes his or her propane supply to the limit.

Little do they know that one of the most dangerous times to be a propane consumer is actually when your tank is empty, or rather right after that empty tank is refilled. Since the tank was empty, it is impossible to know the soundness of that system without first performing a leak test.

In fact, most insurance companies are now requiring that their insured companies perform a leak test on an out-of-gas system before that system can be put back into service. Whether your insurance company requires it or not, it just makes good sense to perform the test as statistics show most propane accidents occur following an out-of-gas call. If you still need more convincing, it is also required by NFPA-54 to perform a leak test any time there is an interruption of service.

The following leak test procedure is based on the requirements of NFPA 54-1999.

Leak Testing A System

Unlike a pressure test, propane can be used during the performance of a leak test.

Step 1:

Prepare for the test.

First, inspect all appliance valves and pipe connections to make sure they are wrench tight. Make sure all appliance connections including pilot

and line valves are securely connected.

Note: The test can be performed on either the tank, high or low pressure portion of the system. The procedure differs between the three.

(Low Pressure)

Step 2:

Make connection. Connect the low-pressure test gauge or manometer on the outlet side of the second stage regulator.

Step 3:

Pressurize the system.

Open the tank valve to pressurize the system. Leave it open for a period of two or three seconds, then close it tightly. Open each appliance shutoff valve slowly. If the pressure drops below 10 inches water column repeat step 3.

Step 4:

Check for leak.

Observe the pressure indicated on the water manometer or low-pressure test gauge. The reading should be at least 11 inches water column. Slowly open one valve in the system to bleed the reading down to exactly nine inches water column plus or minus one-half inch.

If the system holds pressure for three minutes without falling, it is considered a leak-tight system. However, a drop in pressure indicates a leak. If this occurs, check the joints and other possible leak points with an approved leak detector such as a gas detector or liquid leak detector. Soapy water will work, but it should be rinsed



from the piping due to its corrosive nature. **Never test with an open flame.**

If the pressure increases, the tank valve is not shut completely off. Shut off the tank valve and repeat step four.

(Tank Pressure)

Step 2:

Make connection.

Install a high pressure (300-pound) test gauge adapter on the tank service valve and connect the other end of the gauge adapter to the pigtail and regulator inlet.

Step 3:

Pressurize the system.

Open the container valve to allow the system to pressurize while observing the pressure.

Step 4:

Check for leak.

Close the service valve tightly. Slowly bleed gas between the service valve and the gauge adapter. Reduce the pressure at least 10 pounds per square inch and retighten the gauge adapter into the service valve.

Observe the reading on the gauge. If the gauge reading remains constant for three

minutes, it can be assumed the system is leak tight. If the pressure drops, it indicates a leak somewhere in the high or low-pressure piping.

If the pressure drops in either test, find the leak, repair, and retest before filling the tank.

(High Pressure Leak Test)

Step 2:

Make Connection.

Connect a 15-pound gauge on the down stream port of the first stage regulator for the high pressure test.

Step 3:

Pressurize the system.

Open the container valve to allow the system to pressurize while observing pressure.

Step 4:

Check for leak.

Close the service valve tightly. If the pressure continues to climb, it could indicate a leaking service valve. If the pressure holds, bleed it down to five pounds and hold for three minutes. If the pressure drops, it indicates a leak in the system.

Delivery:

A driver should first secure the vehicle against movement by setting the handbrake and placing chock blocks in front of and behind the wheel of the truck.

Secondly, a driver should make sure that all elements of combustion are controlled. Two elements are readily available during the delivery process: fuel (propane) and oxygen (air). Ignition, the third element, must be prevented. A spark, flame or even static electricity can provide the ignition source.

All running engines such as those of motor vehicles, lawn mowers, and etc. should be kept at least 15 feet from the point of transfer. Smoking, open flames, metal cutting or welding torches, portable electric tools and extension lights capable of igniting propane must be kept at least 25 feet from the point of transfer.

The bobtail should be at least 10 feet from the tank and positioned so that the driver can easily access both the shutoff valve on the bobtail and the one on the tank in case

of emergency.

Of course, in order to shut off the valves, the driver must be in attendance while he is unloading the bobtail. The driver must remain within 150 feet of the cargo tank and 25 feet of the delivery hose. If the bobtail is 3,500-gallon capacity or less, then the driver must observe the bobtail's delivery tank and the receiving tank once every five minutes while the internal self-closing valve is open, if the unloading takes more than five minutes.

If the bobtail is more than 3,500 gallon capacity, then the driver must have an unobstructed view of both the cargo tank and the delivery hose if possible. If it is not

possible (then) each should be observed once every five minutes for deliveries longer than five minutes.

All bobtails must also be equipped with an off-truck remote shutoff that will allow the driver to close the internal self-closing valve and shut off all motor and power functions of the vehicle. This remote must function at a distance of 150 feet.

Bobtails with more than 3,500 gallons of capacity must have a passive system capable of shutting down the motor and all power functions unless the driver prevents it from doing so at least once every five minutes.

Articles in this publication are for information only. Nothing in this publication is to be construed as setting standards or requirements. Please consult with appropriate regulatory and rulemaking bodies for all legal requirements.



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Training Quiz

Name _____ Social Security Number _____

1. Deflated tires will give you extra traction.
A. True B. False
2. Vehicles have the potential to overheat during cold winter driving.
A. True B. False
3. Fuller fuel tanks help reduce the potential for fuel line freeze-ups.
A. True B. False
4. Layered clothing is better than just wearing a heavy coat.
A. True B. False
5. You should always know the road conditions before you leave the plant.
A. True B. False
6. Bobtails must be inspected daily for any leak that would be detectable without the use of leak detection devices.
A. True B. False
7. Bobtail leak inspections should be documented each time.
A. True B. False
8. A DOT qualified employee must perform tests and repairs to hoses.
A. True B. False
9. The bobtail driver should visually inspect the portion of the hose unwound after each delivery.
A. True B. False
10. Temperatures lower than ___ degrees can reduce fuel mileage by as much as ___ percent.
A. 20, 12 B. 30, 15 C. 25, 10 D. 15, 5
11. Colder air is denser which creates additional drag.
A. True B. False
12. A leak test can be performed on either the tank, high or low pressure portion of the system.
A. True B. False
13. If the system holds pressure for ___ minutes without falling, it is considered a leak-tight system.
A. 5 B. 3 C. 10 D. 15
14. All running engines such as those of motor vehicles, lawn mowers, and etc. should be kept at least ___ feet from the point of transfer.
A. 25 B. 10 C. 15 D. 20

Training Quiz Answers

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