



Think Safety!

A Publication Of The West Virginia Propane Gas Association

Spring 2017

DOT Cargo Tank Requirements

As we move into the spring, we will continue our DOT series of topics with the third and final newsletter in the series.

We will discuss elements of unloading propane from a cargo tank. It is important that this process never be taken for granted. It requires monitor-

ing and sound equipment. With this in mind, we will focus on attendance requirements and inspection of the unloading equipment.

Also, we will cite rejection criteria of tested equipment as well as some of the records to be maintained.

Cargo Tank Attendance:

Attendance regulations (49 CFR Part 173, 177, and 178) apply to all employees who are involved in the process of unloading a cargo tank.

This includes all requirements specific to metered delivery service such as with a bobtail and non-metered cargo tank service such as transports.

Emergency shutdown procedures are included in these regulations.

As required in 49 CFR 177.834, a qualified person must be in attendance during the entire loading and unloading process. In order to be considered "qualified," that person must be completely fa-



miliar with the characteristics of propane and totally aware of all procedures necessary in the event of an emergency situation. That person must also be capable of and authorized to move the vehicle.

As per 49 CFR 177.840 for cargo tanks with a capacity of 3500 gallons or less when in use in a metered service, the attending person must be within 150 feet of the cargo tank and 25 feet of the delivery hose. He or she must also observe both the cargo tank and the receiving container at least once every five minutes while the hose is connected, the filler valve open, and product is being unloaded.

When unloading a cargo

tank greater than 3500 gallons, the attending person must remain within 150 feet of the cargo tank and within 25 feet of the delivery hose. Additionally, that person must have an unobstructed view of the cargo tank and delivery hose, at least to the point of practicality.

The only exceptions would be a potential loss of view of the receiving container while the controls are being activated at the cargo tank or loss of view of the cargo tank while monitoring the receiving container.

If it is not possible to have an unobstructed view, then the

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Cargo Tank Attendance:

Continued from page one cargo tank and the receiving container must be observed every five minutes during the entire unloading process. Also, the cargo tank must

have an emergency discharge control device. We will discuss this in more detail in a subsequent article.

Unloading during unmetered service requires that the

attendant remain within 25 feet of the cargo tank while the internal self-closing stop valve is open. That person must also have an unobstructed view of the cargo tank

and delivery hose as much as practically possible, except when activating the controls or monitoring the receiving container.

Unloading and Shutdown Equipment:

Of course, smoking is prohibited. Beyond not smoking, care should be taken to make sure anyone in the vicinity of the unloading process does not smoke or create a flame of any kind.

The hand brake must be set on unloading vehicle before unloading can take place.

The engine must be stopped except for the transfer pump, unless the engine is necessary for transfer. If it is necessary, the engine must be stopped while the hose connection is made and then also while it is being disconnected. This would be the point where discharge could occur.

The driver must carry emergency discharge control procedures on or within the delivery vehicle for all deliveries. These emergency procedures must include features for that specific vehicle and for a passive shutdown system the parameters within which the mechanism will function.

The procedure must also

describe the process if the vehicle is equipped with an active shutdown system.

When unloading from a cargo tank during unmetered service, a passive shutdown system is acceptable.

For metered service, when unloading from a cargo tank with a capacity of less than 3500 gallons, off-truck remote shutdown equipment is required.

If the tank capacity is greater than 3500 gallons and the view is obstructed, then an off-truck remote with a query feature or an additional passive shutdown capability is required.

The 49 CFR 177.840 requires a daily test of the off-truck shut-off device. During the test, the internal self-closing stop valve must close and all motive and auxiliary power equipment should stop. The operator must test the system within 18 hours of the first delivery of the day. For a wireless transmitter, the person



conducting the test must be at least 150 feet from the cargo tank and may have the cargo tank in line of site.

Before unloading, the driver must check all components used in delivery including the hose assembly and piping. They must be sound with no obvious defects and the connections must be secure. The inspection must occur while the pressure on the discharge system has reached at least equilibrium with the pressure

on the cargo tank. We will discuss specific rejection criteria in another article.

In the event there is an unintentional release of propane, the driver must close the internal self-closing stop valve and shut down all power.

If the cargo tank vehicle is equipped with an off-truck remote shut-off activation device, the driver must have possession of the remote at all times during the unloading process.

Hose And Piping Assembly Rejection Criteria:

The following criteria should result in the rejection of a delivery hose or hose assembly:

- Damage to the hose cover that exposes the reinforcement

- Wire braid reinforcement that has been kinked or flattened so as to permanently deform the wire braid
- Soft spots when the hose is not under pres-

sure or bulging when the hose is under pressure

- Loose outer covering
- Damaged, slipping, or excessively worn hose couplings

- Loose or missing bolts or fastenings on bolted hose coupling assemblies.
- The delivery hose as-

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Hose And Piping Assembly Rejection Criteria:

Continued from page two

sembly must be inspected at least once each month.

The driver must visually inspect the piping system. This inspection must include all fusible elements and all components of the piping system, including bolts and seals.

You must not unload propane from a cargo tank if the piping system displays any of the listed criteria:

- Any external leak iden-

tifiable without the use of instruments

- Bolts that are loose, missing, or severely corroded
- Manual stop valves that will not actuate
- Stainless steel flexible connectors with damaged reinforcement braid
- Internal self-closing stop valves that fail to close or that permit leakage through the



valve detectable without the use of instruments

- Pipes or joints that are severely corroded

Stop Valve Emergency Closure Test:

The discharge control devices must be actuated to make sure all linkages operate as designed. In performing the test, all internal self-closing stop valves must be opened. Each emergency discharge control remote actuator must be operated to make sure that all self-closing stop valve's lever, piston, or other valve indicator has moved to the closed position.

On pump-actuated pressure differential valves, the three-way toggle valve handle or its cable must be activated to

verify that the toggle handle moves to the closed position.

Leakage is defined as any leakage through the internal self-closing valve or to the atmosphere that is detectable when the valve is closed. There are a couple of testing methods.

One testing method is the meter creep test. For this test, the meter can be used as a flow measurement indicator. Begin the test by starting the delivery process or returning propane back to the cargo tank through the delivery system. Once

the flow is established, close the internal self-closing stop valve. The meter flow must stop within 30 seconds with no meter creep within five seconds after the meter stops.

On pump-actuated pressure differential internal self-closing stop valves, the valve must be closed with the remote actuator to make sure it is functioning. On other types of internal self-closing valves, the valve may be closed using either the normal valve control or the discharge control

system.

Any detectable meter creep within the first five seconds means that it must be rejected.

Leakage may also be tested using the internal self-closing stop valve test. The internal self-closing valve must be in the closed position. All of the propane in the downstream piping must be evacuated and the piping must be returned to atmospheric temperature and pressure. A leak of any kind within 30 seconds is considered unacceptable.

DOT Training:

DOT hazmat training is required for any employee involved in the transportation of propane.

The employee must complete this training prior to assigning that employee to any task involving the handling, storage, shipment or transportation of propane.

Refresher training is re-

quired every three years after the initial training. The employee must also repeat the training if his or her duties change.

Companies should periodically review their unloading procedures and practices to ensure that all of the necessary components are included

such as:

Only qualified employees, with the required training, are allowed to perform unloading duties. This applies to both company employees and contractors.

Written unloading procedures specific to the individual vehicle must be carried on the

vehicle including both company owned and contracted vehicles.

All vehicles are equipped with the proper shutdown equipment and that it is working properly.

Each vehicle is equipped with the required emergency discharge control equipment.

Record Keeping:

The following files should be maintained:

Current delivery hose assembly identification numbers

Pressure tests for all repaired and replaced delivery hose assemblies

Monthly inspection records for the delivery hose assembly and emergency shutdown systems as well as tests of internal self-closing stop valves and emergency shutdown systems on annual cargo tank inspec-

tions performed by US DOT registered inspectors

US DOT registered Design certified engineer certification of emergency shutdown systems and verification of proper installation by a US DOT registered inspector at the time of installation.

A daily inspection record should be kept of all driver inspections of unloading equipment.

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.

**Operator Inspection and Record Addendum
for
New or Repaired Delivery Hose Assemblies**

CFR 180.416(f) (1) (2) (3)

Please circle appropriate answer, sign and print name and date below.

Delivery hose is: *New Installation* *Repaired Assembly*

YES NO Attached test and inspection record (Proof Test Sheet) from the hose assembler includes the following information;

- Date of test and inspection
- Hose identification number
- Date of original hose assembly test (if repaired assembly)
- Notes of any defects and/or repairs made
- Test results; pass or fail
- Inspector's signature

YES NO Hose certification (Proof Test Sheet) states delivery hose was tested at minimum of 120 percent of the maximum working pressure (420 PSI).

YES NO Delivery hose has been visually examined under pressure and condition is satisfactory according to criteria outlined in CFR 180.416(g).

YES NO Delivery hose is permanently marked with month and year of test.

Operator Signature _____

Please print name here _____

Company Name (Hose Owner) _____



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Training Quiz

Name _____ Social Security Number _____

1. When unloading a cargo tank, a qualified person must be in attendance during the entire loading and unloading process.
A. True B. False
2. In order to be considered “qualified,” a person must be completely familiar with the characteristics of propane and totally aware of all emergency procedures.
A. True B. False
3. For cargo tanks with a capacity of 3500 gallons or less when in use in a metered service, the attending person must be within ___ feet of the cargo tank and ___ feet of the delivery hose.
A. 150, 25 B. 110, 35 C. 150, 50 D. 130, 50
4. The driver must observe both the cargo tank and the receiving container at least once every ___ minutes while the hose is connected, the filler valve open, and product is being unloaded.
A. three B. 10 C. five D. 15
5. When unloading a cargo tank greater than 3,500 gallons, the driver must have an unobstructed view of the cargo tank and delivery hose, at least to the point of practicality.
A. True B. False
6. When unloading a cargo tank greater than 3,500 gallons, if the driver does not have an unobstructed view of the cargo tank and delivery hose, then the container must be observed every five minutes during the entire unloading process.
A. True B. False
7. If it is necessary for transfer, the engine must be stopped while the hose connection is made and then also while it is being disconnected.
A. True B. False
8. While testing the shutdown device, the internal self-closing stop valve must close and all motive and auxiliary power equipment should stop.
A. True B. False
9. The operator must test the shutdown system within ___ hours of the first delivery of the day.
A. 24 B. 18 C. 36 D. 48
10. The following criteria should result in the rejection of a delivery hose:
A. Damage to the hose cover that exposes the reinforcement
B. Wire braid reinforcement that has been kinked or flattened so as to permanently deform the wire braid
C. Soft spots when the hose is not under pressure or bulging when the hose is under pressure
D. A,B, and C.

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