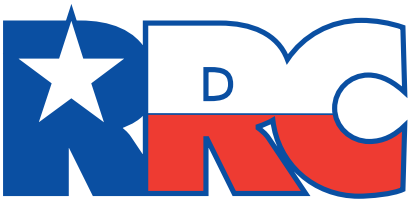
TEXAS LP-GAS EXAMINATION STUDY GUIDE

Transport Driver Employee Level



RAILROAD COMMISSION OF TEXAS

December 2012

NOTICE

This publication is intended for use in its entirety as a guide for persons preparing to take Railroad Commission LP-gas qualifying examinations. Any other use or distribution of this publication or use or distribution of any portion of this publication for any purpose whatsoever is considered by the Railroad Commission of Texas to be misuse of this publication.

This publication is not intended to be an exhaustive treatment of the subjects covered and should not be interpreted as precluding the use of other safety programs or procedures that comply with (1) applicable federal, state, and/or local code provisions, statutes, ordinances, and/or other regulations, including, but not limited to, the Railroad Commission of Texas' LP-Gas Safety Rules and codes adopted by the Railroad Commission of Texas, and/or (2) other industry standards and/or practices.

Every effort was made to ensure that this publication was accurate and up-to-date as of the date of publication. The reader is cautioned, however, about reliance on this publication or any portion thereof at any time thereafter, particularly because changes in technology are likely to occur that might make portions of this publication inaccurate and out-of-date. The Railroad Commission of Texas assumes no liability, under any circumstances, for any actions taken or omissions made in reliance of the contents of this publication, from whatever source, or any other consequences of any such reliance.

Exam administration

Taking an examination in Austin

You may take any LP-gas qualifying examination in Austin without pre-registering ("walk-in") on any business day, excluding holidays, from 8:00 a.m. to 12:00 noon at the AFRED Training Center. The Training Center is located at 6506 Bolm Road, at the intersection of U.S. Highway 183.

Tuesdays and Thursdays are the preferred days for walk-in examinations.

(See map to Training Center on page 24.)

Taking an examination outside of Austin

You may also take any Railroad Commission qualifying examination at more than two dozen other locations statewide. Exam dates, times and locations are listed three months in advance on the Commission's web site. To view a complete schedule, go to www.rrc.state.tx.us. From the drop-down menu under "Education and Training," choose "Training Classes & Qualifying Exams" and click on "Class/Exam Schedule." The online schedule has links to maps showing each class and exam location.

You must register at least two business days in advance to take an examination outside of Austin. To register online, go to www.rrc.state.tx.us. From the drop-down menu under "Education and Training," choose "Training Classes & Qualifying Exams" and click on "Register Now." The web site allows you to register up to four people for an examination.

When you register online, you will receive a return e-mail confirming the registration and the dates and locations of the exams. You will also receive advance notification of any changes in the examination date, time or location.

Payment for exams; LPG Form 16; ID required

The fee is $40.00 for each employee-level exam and $70.00 for each management-level exam. Fees are non-refundable by state law, and cash cannot be accepted.

You may pay the required examination fee at any exam location by check or money order payable to the Railroad Commission of Texas. LPG Form 16, "Application for Examination," may also be completed at the examination site. Examinees must also present an official state-issued driver's license or photo ID at the exam site.

You may also pay your examination fee by credit card in advance online. To pay by credit card, go to www.rrc.state.tx.us. From the drop-down menu under "Education and Training," choose "Training Classes & Qualifying Exams" and click on "Pay Online." Be sure to print out the confirmation page in Step 6. Make a copy of the confirmation page for your records and bring a copy with you to the examination site.

Open-book examinations

All Railroad Commission LP-gas employee-level qualifying examinations are open book. Examinees may use a copy of NFPA 58, 2008 edition, the Railroad Commission's LP-Gas Safety Rules, and the Railroad Commission's 49 CFR Supplement for Transport Drivers to take their transport driver examination. This study guide may not be used during any employee-level examination.

The questions on the employee-level transport driver examination are not organized by topic as they are in this study guide.

Examination time limit

The employee-level transport driver examination must be completed within two hours after the examination is given to you, including any breaks you elect to take. The examination proctor is the official timekeeper. You must submit your examination and your answer sheet to the proctor within the two-hour limit.

Grades, reports, and retakes

The minimum passing grade is 75 percent on all LP-gas examinations.

All examinations administered at the Training Center in Austin are graded on-site, and examinees are immediately informed of the results. If you fail an examination that you took in Austin, you may retake that same examination only one additional time during a business day. Any subsequent examination must be taken on another business day, unless approved by the Commission.

Exams taken at a remote site are graded as soon as possible, and the results of the examination are reported to you by telephone within two working days.

If you pass an examination, the Railroad Commission will issue you a blue certification card within 10 working days. You will be notified by letter if you fail an examination.

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LP-GAS EXAMINATION STUDY GUIDE
EMPLOYEE-LEVEL TRANSPORT DRIVER

Who should use this guide?

You should use this guide to prepare for the Railroad Commission's employee-level qualifying examination to operate a propane transport. The guide may not be used during the examination.

The transport-driver certification qualifies you to perform the following LP-gas activities:

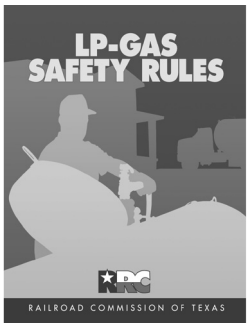
- Operate an LP-gas trailer or semi-trailer equipped with a container of more than 5,000 gallons water capacity;
- Load and unload LP-gas and connect and disconnect transfer hoses.

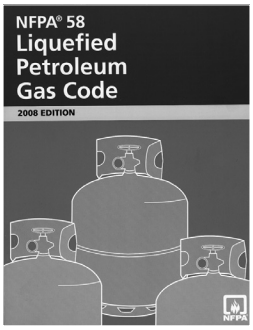
The transport driver examination does not authorize you to operate a bobtail or to install or repair transport systems.

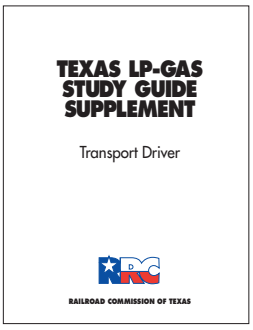
What books do I need?

This examination tests your knowledge of the laws and standards that apply to transport operations in Texas. These laws and standards are found in three books:

LP-Gas Safety Rules (Texas Railroad Commission)
NFPA 58: *Liquefied Petroleum Gas Code* (National Fire Protection Association, 2008)
Title 49, *Code of Federal Regulations* (CFR) Supplement







Where do I get these books?

You may download the current edition of the Railroad Commission's LP-Gas Safety Rules free online at www.rrc.state.tx.us. From the drop-down menu under "Education & Training," select "Training Classes & Qualifying Exams" and scroll down to "LPG Safety Rules (PDF)." You may also buy a printed copy of the book for $10.00, tax included, by calling the Railroad Commission's publications office at (512) 463-7309.

Printed copies of NFPA 58 are available for purchase from the Texas Propane Gas Association by calling (800) 392-0023. You may also order NFPA manuals online at www.nfpa.org; click on"Codes and Standards."

Key parts of 49 CFR are available free online from the Railroad Commission as a supplement to this study guide. Go to www.rrc.state.tx.us. From the drop-down menu under "Education & Training," select "Training Classes & Qualifying Exams." Then click on "Study Guides (LPG, CNG and LNG)" and scroll down to "CFR Supplement (PDF)." The full current text of electronic 49 CFR can be viewed online. Go to http://ecfr.gpoaccess.gov and select "Title 49 – Transportation."

Sections and topics

Before you take this examination you should know the definitions on pages 7 and 8 of this study guide and the contents of the following sections of the codes and standards.

The actual examination may not cover all of the listed sections and topics.

Railroad Commission *LP-Gas Safety Rules*

Unless otherwise stated, a transport is defined in §9.2(52) as "Any bobtail or semitrailer equipped with one or more containers."

§9.113	Maintenance
§9.129	Manufacturer's Nameplate and Markings on ASME Containers
§9.135	Unsafe or Unapproved Containers
§9.140	Uniform Protection Standards
§9.141	Uniform Safety Requirements
§9.143	Bulkhead, Internal Valve
§9.201	Applicability
§9.202	Registration and Transfer
§9.211	Markings
§9.212	Manifests
§9.403	Sections in NFPA 58 Not Adopted by Reference, and Adopted With Changes or Additional Requirements: 5.7.4.1, 5.7.4.2, and 6.6.3.1

NFPA 58 (2008)

§3.3	General Definitions
§4.2	LP-Gas Odorization
§5.9	Piping (Including Hose), Fittings, and Valves
§6.3	Container Separation Distances
§6.4	Other Container Location Requirements
§6.6	Installation of Containers
§6.25	Fire Protection
§7.2	Operational Safety
§9.2	Electrical Requirements
§9.4	Transportation in Cargo Tank Vehicles
§9.7	Parking and Garaging Vehicles Used To Carry LP-Gas Cargo

Title 49, *Code of Federal Regulations* (CFR)

49 CFR §171.8
49 CFR §172.203(h)(2)
49 CFR §172.504(a), (c)(1)
49 CFR §173.315(n)(2)
49 CFR §177.834(i), (j)
49 CFR §177.840(g), (l)-(n), (q), (r)
49 CFR §178.337-1(d), (g)
49 CFR §180.407(c), (d), (g)
49 CFR §180.416(b)-(e), (g)
49 CFR §392.8
49 CFR §396.7(a), (b)
49 CFR §396.11(a)-(c)
49 CFR §396.13(a)-(c)

Terms and definitions

NOTE: The list below is not exhaustive. You are responsible for knowing all the terms and definitions that apply to the LP-gas activities you will perform, as well as the rules and standards highlighted in this guide.

NFPA 58 (2008)

NOTE: Informal terms that are sometimes used in the propane industry instead of formal technical terms are given in brackets.

Container. Any vessel, including cylinders, tanks, portable tanks, and cargo tanks, used for the transporting or storage of LP-gases.
NFPA 58, §3.3.13

Container Appurtenances. Devices installed in container openings for safety, control, or operating purposes.
NFPA 58, §3.3.14

DOT. The United States Department of Transportation.
NFPA 58, §3.3.21

Fixed Liquid Level Gauge. A liquid level indicator that uses a positive shutoff vent valve to indicate that the liquid level in a container being filled has reached the point at which the indicator communicates with the liquid level in the container.
NFPA 58, §3.3.29.1

Fixed Maximum Liquid Level Gauge [“outage gauge,” “spitter valve,” “spew gauge”]. A fixed liquid level gauge that indicates the liquid level at which the container is filled to its maximum permitted filling limit.
NFPA 58, §3.3.29.2

Flexible Connector. A short [60 in. maximum length] component of a piping system that is made of flexible material (such as hose) and equipped with suitable connections on both ends.
NFPA 58, §3.3.25

Liquefied Petroleum Gas ["LP-Gas, LPG"]. Any material having a vapor pressure not exceeding that allowed for commercial propane that is composed predominantly of the following hydrocarbons, either by themselves or as mixtures: propane, propylene, butane (normal butane or isobutane), and butylenes.
NFPA 58, §3.3.36

Point of Transfer. The location where connections and disconnections are made or where LP-gas is vented to the atmosphere during transfer operations.
NFPA 58, §3.3.54

Title 49, Code of Federal Regulations

Emergency discharge control means the ability to stop a cargo tank unloading operation in the event of an unintentional release. Emergency discharge control can utilize passive or off-truck remote means to stop the unloading operation. A passive means of emergency discharge control automatically shuts off the flow of product without the need for human intervention within 20 seconds of an unintentional release caused by a complete separation of the liquid delivery hose. An off-truck remote means of emergency discharge control permits a qualified person attending the unloading operation to close the cargo tank's internal self-closing stop valve and shut off all motive and auxiliary power equipment at a distance from the cargo tank motor vehicle.
49 CFR §178.337-1(g)

Excess flow valve, ***integral excess flow valve***, or ***excess flow feature*** means a component that will close automatically if the flow rate of a gas or liquid through the component reaches or exceeds the rated flow of gas or liquid specified by the original valve manufacturer when piping mounted directly on the valve is sheared off before the first valve, pump, or fitting downstream from the valve.
49 CFR §178.337-1(g)

Internal self-closing stop valve means a primary shutoff valve installed in a product discharge outlet of a cargo tank and designed to be kept closed by self-stored energy.
49 CFR §178.337-1(g)

Passive Means of Emergency Discharge Control. An automatic means to shut off the flow of product without the need for human intervention within 20 seconds of an unintentional release caused by a complete separation of the liquid delivery hose.
49 CFR 178.337-1(g)

Primary discharge control system means a primary shut-off installed at a product discharge outlet of a cargo tank consisting of an internal self-closing stop valve that may include an integral excess flow valve or an excess flow feature, together with linkages that must be installed between the valve and remote actuator to provide manual and thermal on-truck remote means of closure.
49 CFR §178.337-1(g)

Transport vehicle means a cargo-carrying vehicle such as an automobile, van, tractor, truck, semitrailer, tank car or rail car used for the transportation of cargo by any mode. Each cargo-carrying body (trailer, rail car, etc.) is a separate transport vehicle.
49 CFR §171.8

Key topics

NOTE: The list below is not exhaustive. You are responsible for knowing all the facts, rules, standards and procedures that apply to the LP-gas activities you will perform, as well as the rules and standards highlighted in this guide.

As you study the applicable codes and standards, pay special attention to the facts, rules and procedures related to the following topics. Then when you take the examination, read each question very carefully.

1. Cargo Tank Motor Vehicles (CTMV)

LP-Gas Safety Rules

Decal and Marking Requirements

A person must not introduce LP-gas into a transport container unless that unit bears a current Railroad Commission LPG Form 4 decal.
LP-Gas Safety Rules, §9.202(c)(2)

In addition to NFPA 58 §9.4.6.2, each LP-gas transport and container delivery unit in LP-gas service must be marked with lettering at least two inches in height, in sharp contrast to the background, on each side and the rear with the name of the licensee or the ultimate consumer operating the unit.
LP-Gas Safety Rules, §9.211

NFPA 58

Electrical, Hazardous Material and Fire Extinguisher Requirements

Electrical wiring on cargo tank motor vehicles must be insulated and protected from physical damage.
NFPA 58, §9.2

All LP-gas cargo tank vehicles used in interstate or intrastate commerce must comply with the applicable portion of the U.S. Department of Transportation Hazardous Materials Regulations of the DOT Federal Motor Carrier Safety Regulations (Title 49, *Code of Federal Regulations*).
NFPA 58, §9.4.1.3

The minimum fire extinguisher requirement for each cargo tank motor vehicle is 18 pounds B:C rating.
NFPA 58, §9.4.7

Parking and Smoking Requirements

Except for necessary absences from the vehicle associated with the driver's normal duties, vehicles must not be left unattended on any street, highway, avenue, or alley.
NFPA 58, §9.7.2.1

An LP-gas transport must not be left unattended except during necessary absences from the vehicle associated with drivers' normal duties. These absences include meals stops or rest stops.
NFPA 58, §9.7.2.1

Vehicles must not be parked in congested areas.
NFPA 58, §9.7.2.2

Where vehicles are parked off the street in an uncongested area, they must be at least 50 feet from any building used for assembly, institutional, or multiple residential occupancy.
NFPA 58, §9.7.2.3

Vehicles must not be left unattended on any street, highway, avenue, or alley, except for necessary absences from the vehicle associated with drivers' normal duties, including stops for meals and rest stops during the day or night, except as follows:

(1) This requirement does not apply in an emergency.
(2) This requirement does not apply to vehicles parked in accordance with 9.7.2.3 and 9.7.2.4.
NFPA 58, §9.7.2.1

No person may smoke or carry lighted smoking materials:

(1) on or within 25 feet of a vehicle containing LP-gas liquid or vapor,
(2) at points of liquid transfer, or
(3) when delivering or connecting to containers.
NFPA 58, §9.4.10

Title 49, Code of Federal Regulations

Shipping Paper Requirement

Transportation by highway. Following the basic description for a hazardous material in a Specification MC 330 or MC 331 cargo tank, there must be entered for liquefied petroleum gas, the word "NONCORROSIVE" or "NONCOR" on the shipping papers, to indicate the suitability for shipping noncorrosive liquefied petroleum gas in a cargo tank made of quenched and tempered steel.
49 CFR §172.203(h)(2)

Placarding and Painting Requirements

Each bulk packaging, freight container, unit load device, transport vehicle or rail car containing any quantity of a hazardous material must be placarded on each side and each end.
49 CFR §172.504(a)

Vehicles transporting more than 1,000 lbs. total weight of LP-gas must be placarded.
49 CFR §172.504(c)(1)

Every uninsulated cargo tank permanently attached to a cargo tank motor vehicle must be painted a white, aluminum or similar reflecting color on the upper two-thirds of area of the cargo tank.
49 CFR §178.337-1(d)

Transporting Class 2 Materials (Gases)

A cargo tank motor vehicle in other than metered delivery service must have a means to automatically shut off the flow of product without the need for human intervention within 20 seconds of an unintentional release caused by a complete separation of a liquid delivery hose (passive shut-down capability).
49 CFR §173.315 (n)(2)

A person may not drive a cargo tank motor vehicle containing a hazardous material regardless of quantity unless
(1) All manhole closures are closed and secured; and
(2) All valves and other closures in liquid discharge systems are closed and free of leaks.
49 CFR §177.834(j)

Each liquid discharge valve on a cargo tank motor vehicle, other than an engine fuel line valve, must be closed during transportation except during loading and unloading.
49 CFR §177.840(g)

Operating procedure. Each operator of a cargo tank motor vehicle that is subject to the emergency discharge control requirements in §173.315(n) must carry on or within the cargo tank motor vehicle written emergency discharge control procedures for all delivery operations. The procedures must describe the cargo tank motor vehicle's emergency discharge control features and, for a passive shut-down capability, the parameters within which they are designed to function. The procedures must describe the process to be followed if a facility-provided hose is used for unloading when the cargo tank motor vehicle has a specially equipped delivery hose assembly.
49 CFR §177.840(l)

Unsafe Operations Forbidden

General. A motor vehicle shall not be operated in such a condition as to likely cause an accident or a breakdown of the vehicle.
49 CFR §396.7(a)

Exemption. Any motor vehicle discovered to be in an unsafe condition while being operated on the highway may be continued in operation only to the nearest place where repairs can safely be effected. Such operation shall be conducted only if it is less hazardous to the public than to permit the vehicle to remain on the highway.
49 CFR §396.7(b)

SAMPLE QUESTION

Each cargo tank motor vehicle must be provided with at least one approved portable fire extinguisher having a minimum of _____ lb. dry chemical with a B:C rating.

A. 25
B. 20
C. 18
D. 15

Answer: C

2. Loading and Unloading

NFPA 58

Attendance at Transfer Operations

At least one qualified person must remain in attendance at the transfer operation from the time connections are made until the transfer is completed, shutoff valves are closed, and lines are disconnected.
NFPA 58, §7.2.1.2

Only qualified personnel trained in proper handling and operating procedures may transfer LP-gas to and from a container.
NFPA 58, §7.2.2.1

Transfer Operations

Sources of ignition must be turned off during transfer operations and while connections or disconnections are being made or while LP-gas is being vented to the atmosphere.
NFPA 58, §7.2.3.2

Internal-combustion engines on an LP-gas cargo tank vehicle may be used to drive transfer pumps or compressors to load containers.
NFPA 58, §7.2.3.2(A) (1)

Smoking, open flame, portable electrical tools, and extension lights capable of igniting LP-gas are not permitted within 25 feet of a point of transfer while filling operations are in progress.
NFPA 58, §7.2.3.2(B)

Cargo tank vehicles unloading into storage containers must be at least 10 feet from the container and so positioned that the shutoff valves on both the truck and the container are readily accessible.
NFPA 58, §7.2.3.3

The transfer operation of an LP-gas cargo tank vehicle must be made by a transfer means at the delivery point or by pump or compressor mounted on the vehicle.
NFPA 58, §9.4.1.2

Each cargo tank vehicle and trailer must carry chock blocks, which must be used to prevent rolling of the vehicle whenever it is being loaded or unloaded or is parked.
NFPA 58, §9.4.8

Title 49, Code of Federal Regulations

Loading and Unloading Requirements

A cargo tank must be attended by a qualified person at all times when it is being loaded. The person who is responsible for loading the cargo tank is also responsible for ensuring that it is so attended.
49 CFR §177.834(i)

A motor carrier who transports hazardous materials by a cargo tank must ensure that the cargo tank is attended by a qualified person at all times during unloading.
49 CFR §177.834(i)

Cargo tank motor vehicle safety check. Before unloading from a cargo tank motor vehicle containing a liquefied compressed gas, the qualified person performing the function must check those components of the discharge system, including delivery hose assemblies and piping, that are readily observed during the normal course of unloading to assure that they are of sound quality, without obvious defects detectable through visual observation and audio awareness, and that connections are secure.

This check must be made after the pressure in the discharge system has reached at least equilibrium with the pressure in the cargo tank. Operators need not use instruments or take extraordinary actions to check components not readily visible. No operator may unload liquefied compressed gases from a cargo tank motor vehicle with a delivery hose assembly found to have any condition identified in Sec. 180.416(g)(1) or with piping systems found to have any condition identified in §180.416(g)(2).
49 CFR §177.840(m)

Emergency shutdown. If there is an unintentional release of product to the environment during unloading of a liquefied compressed gas, the qualified person unloading the cargo tank motor vehicle must promptly shut the internal self-closing stop valve or other primary means of closure and shut down all motive and auxiliary power equipment.
49 CFR §177.840(n)

Unloading liquefied petroleum gas from a cargo tank motor vehicle in other than metered delivery service:

(1) The qualified person attending the unloading operation must remain within 25 feet of the cargo tank when the internal self-closing stop valve is open.

(2) The qualified person attending the unloading operation must have an unobstructed view of the cargo tank and delivery hose to the maximum extent practicable, except during short periods when it is necessary to activate controls or monitor the receiving container.
49 CFR §177.840(q)

Unloading using facility-provided hoses. A cargo tank motor vehicle equipped with a specially designed delivery hose assembly to meet the requirements of §173.315(n)(2) may be unloaded using a delivery hose assembly provided by the receiving facility under the following conditions:

(1) The qualified person monitoring unloading must visually examine the facility hose assembly for obvious defects prior to its use in the unloading operation.

(2) The qualified person monitoring unloading must remain within arm's reach of the mechanical means of closure for the internal self-closing stop valve when the internal self-closing stop valve is open except for short periods when it is necessary to activate controls or monitor the receiving container.

(3) If the facility hose is equipped with a passive means to shut off the flow of product that conforms to and is maintained to the performance standard in §173.315(n)(2), the qualified person may attend the unloading operation in accordance with the attendance requirements prescribed for the material being unloaded in 49 CFR §177.834.
49 CFR §177.840(r)

When unloading LP-gas, no operator may use a delivery hose assembly that has been determined to have damaged, slipping, or excessively worn hose couplings or loose or missing bolts or fastenings on bolted hose coupling assemblies.
49 CFR §180.416(g)(1)(iv)-(v)

SAMPLE QUESTION

Open flames capable of igniting LP-gas must not be permitted within _____ feet of a point of transfer while filling operations are in progress.

A. 50
B. 25
C. 15
D. 10

Answer: B

3. Piping, Hoses, Fittings, Valves, Inspections and Maintenance

NFPA 58

Hose, Connections and Flexible Connectors

Hose, hose connections, and flexible connectors must be fabricated of materials that are resistant to the action of LP-gas, both liquid and vapor.
NFPA 58, §§9.4.3.5 and 5.9.6.1

An LP-gas hose, hose connection, or flexible connector used for conveying liquid or vapor in excess of 5 psig must have a minimum working pressure of 350 psig with a safety factor of 5 to 1, continuously marked with LP-Gas or Propane, 350 psi working pressure and the manufacturer's name or trademark.
NFPA 58, §§9.4.3.5 and 5.9.6.4

The flexible hose portion of the connector must be replaced with an unused connector within 10 years of the indicated date of installation.
NFPA 58, §9.4.3.7(2)

A flexible connector on a cargo tank vehicle must be visually inspected before the first delivery of each day.
NFPA 58, §9.4.3.7(2)

Protection of Cargo Tank Appurtenances, Piping System, and Equipment

Container appurtenances, piping, and equipment comprising the complete LP-gas system on a cargo tank vehicle must be mounted in position, must be protected against damage, and must be in accordance with DOT regulations.
NFPA 58, §9.4.5

Title 49, Code of Federal Regulations

Discharge System Inspection and Maintenance

Hose identification. The operator must assure that each delivery hose assembly is permanently marked with a unique identification number and maximum working pressure.
49 CFR §180.416(b)

Post-delivery hose check. After each unloading, the operator must visually check that portion of the delivery hose assembly deployed during the unloading.
49 CFR §180.416(c)

Monthly Inspection and Testing.

(1) The operator must visually inspect each delivery hose assembly at least once each calendar month the delivery hose assembly is in service.

(2) The operator must visually inspect the piping system at least once each calendar month the cargo tank is in service. The inspection must include fusible elements and all components of the piping system, including bolts, connections, and seals.

(3) At least once each calendar month a cargo tank is in service, the operator must actuate all emergency discharge control devices designed to close the internal self-closing stop valve to assure that all linkages operate as designed.

(4) The operator of a cargo tank must check the internal self-closing stop valve in the liquid discharge opening for leakage through the valve at least once each calendar month the cargo tank is in service.

(5) The operator must note each inspection in a record. That record must include the inspection date, the name of the person performing the inspection, the hose assembly identification number, the company name, the date the hose was assembled and tested, and an indication that the delivery hose assembly and piping system passed or failed the tests and inspections. A copy of each test and inspection record must be retained by the operator at its principal place of business or where the vehicle is housed or maintained until the next test of the same type is successfully completed.
49 CFR §180.416(d)

Annual hose leakage test. The owner of a delivery hose assembly that is not permanently attached to a cargo tank motor vehicle must ensure that the hose assembly is annually tested in accordance with §180.407(h)(4).
49 CFR §180.416(e)

Rejection Criteria.

(1) No operator may use a delivery hose assembly determined to have any condition identified below for unloading liquefied compressed gases. An operator may remove and replace damaged sections or correct defects discovered. Repaired hose assemblies may be placed back in service if retested successfully in accordance with paragraph (f).

(i) Damage to the hose cover that exposes the reinforcement.
(ii) Wire braid reinforcement that has been kinked or flattened so as to permanently deform the wire braid.
(iii) Soft spots when not under pressure, bulging under pressure, or loose outer covering.
(iv) Damaged, slipping, or excessively worn hose couplings.
(v) Loose or missing bolts or fastenings on bolted hose coupling assemblies.

(2) No operator may use a cargo tank with a piping system found to have any condition identified in this paragraph (g)(2) for unloading liquefied compressed gases.

(i) Any external leak identifiable without the use of instruments.
(ii) Bolts that are loose, missing, or severely corroded.
(iii) Manual stop valves that will not actuate.
(iv) Rubber hose flexible connectors with any condition outlined in paragraph (g)(1).
(v) Stainless steel flexible connectors with damaged reinforcement braid.
(vi) Internal self-closing stop valves that fail to close or that permit leakage through the valve detectable without the use of instruments.
(vii) Pipes or joints that are severely corroded.
49 CFR §180.416(g)

SAMPLE QUESTION

Which of the following delivery hose assembly conditions requires the hose to be removed from service until repaired or replaced?

A. Exposed reinforcement
B. Damaged, slipping or excessively worn hose couplings
C. Bulging under pressure
D. Loose outer covering
E. All of the above

Answer: E

4. Bulk Plant, Stationary Storage, Inspection and Safety Requirements

LP-Gas Safety Rules

Maintenance

All LP-gas storage containers, valves, dispensers, accessories, piping, and transfer equipment must be maintained in safe working order and in accordance with the manufacturer's instructions and the LP Gas Safety Rules. LP-Gas Operations may require the installation to be immediately removed from LP-gas service and not operated until the necessary repairs have been made if any one of the LP-gas storage containers, valves, dispensers, accessories, piping, and transfer equipment is not in safe working order.
LP-Gas Safety Rules, §9.113

Nameplates and Markings on ASME Containers

LP-gas must not be introduced into an ASME container unless the container is equipped with an original nameplate or at least one of the following nameplates permanently attached to the container:

- Railroad Commission identification nameplate, attached by a representative of the Commission;
- Duplicate nameplate, issued by the original manufacturer;
- Modification (or alteration) nameplate, issued and affixed by an ASME Code facility; or
- Replacement nameplate, issued and affixed by the original manufacturer or its successor.

Nameplates on containers built prior to September 1, 1984, must include at least:

(1) the name of the container manufacturer,
(2) the manufacturer's serial number,
(3) the container's working pressure and
(4) the container's water capacity.

Nameplates on containers built on or after September 1, 1984, must be stainless steel and permanently attached to the container by continuous fusion welding around the perimeter of the nameplate.
LP-Gas Safety Rules, §9.129

Unsafe or Unapproved Containers, Cylinders, or Piping

A licensee or a licensee's employee may not legally introduce LP-gas into any container or cylinder if he or she knows or has reason to believe that the container, piping, or the system or the appliance is unsafe or was not installed in accordance with Texas statutes or LP-Gas Safety Rules.
LP-Gas Safety Rules, §9.135

Uniform Protection Standards

LP-gas transfer systems and storage containers must be protected from tampering and/or vehicular traffic by fencing, guard railing or a combination of guard railing and fencing.

Fencing located more than 25 feet from any point of an LP-gas transfer system or container must be designated as perimeter fencing. If an LP-gas transfer system or container is located inside perimeter fencing and is subject to vehicular traffic, it must be protected against damage according to the guardrail requirements.
LP-Gas Safety Rules, §9.140(b)(6)

When unodorized LP-gas is stored in a container, the container must be marked NOT ODORIZED in four-inch high letters on both ends or both sides.
LP-Gas Safety Rules, §9.140(g), Table 1, No. 8

In addition to NFPA 58, §6.6.1.4, ASME containers, except vaporizers, must be painted white or aluminum, or any other heat-reflective color (such as light green or light blue). Darker, heat-absorbing colors (such as black or navy blue) are not permitted.
LP-Gas Safety Rules, §9.141(a)(1)

Bulkheads

Bulkheads, whether horizontal or vertical, must comply with the following requirements:

(1) Bulkheads must be installed for both liquid and vapor return piping.

(2) No more than two transfer hoses must be attached to a pipe riser. If two hoses are simultaneously connected to one or two transports, the use of the two hoses must not prevent the activation of the ESV in the event of a pullaway.

(3) Both liquid and vapor transfer hoses must be plugged or capped.

(4) Bulkheads must be located at least 10 feet from any aboveground container or containers and a minimum of 10 feet horizontally from any portion of a container or valve exposed aboveground on any underground or mounded container.

(5) Horizontal bulkheads must not be converted to vertical bulkheads.
LP-Gas Safety Rules, §9.143(d)

Stationary LP-gas installations with individual or aggregate water capacities of 4,001 gallons or more are exempt from bulkhead and ESV requirements, if:

(1) Each container is filled solely through a 1 3/4 inch double back check filler valve installed directly into the container; and

(2) At least one clearly identified and easily accessible manually operated remote emergency shutoff device must be located between 25 and 100 feet from the point of transfer in the path of egress to close the primary discharge valves in the containers; and

(3) The LP-gas installation is not used to fill an LP-gas transport.
LP-Gas Safety Rules, §9.143(i)

Manifest Requirements

All manifests or bills of lading must indicate:

- The amount and type of odorant per gross gallons,
- The vapor pressure of the product at 100 degrees Fahrenheit,
- The net gallons,
- The loading temperature,
- The specific gravity at 60 degrees Fahrenheit,
- The type of product, and
- The United Nations number with verification by the loading entity and loader.

A copy of the manifest or bill of lading must be given to the entity receiving the shipment.
LP-Gas Safety Rules, §9.212(a)

ASME Container Mounting and Internal Valve Requirements

ASME containers over 4,000 gallons water capacity with a container opening 1 ¼ inch or greater can be equipped with a pneumatically operated internal valve equipped for remote closure and automatic shutoff using thermal (fire) actuation where the thermal element is located within 5 feet of the internal valve.
LP-Gas Safety Rules, §9.403; §5.7.4.2

Horizontal ASME containers designed for permanent installation in stationary service above ground must be placed on masonry or other noncombustible structural supports installed on concrete or masonry foundations. Containers must not be in contact with the soil.
LP-Gas Safety Rules, §9.403(a); §6.6.3.1

NFPA 58

Odorization, Minimum Distances and Combustible Materials

Prior to delivery to a bulk plant, LP-gases must be odorized so that they are detectable, by a distinct odor, to a concentration in air of not over one-fifth of the lower limit of flammability.
NFPA 58, §4.2.1

Container Separation Distances

An aboveground LP-gas container with an individual water capacity of 2,001–30,000 gallons must be separated from important buildings and lines of adjoining property that can be built upon by a minimum distance of 50 feet.
NFPA 58, §6.3.1

Other Container Location Requirements

Loose or piled combustible material and weeds and long dry grass must be separated from containers by a minimum of 10 feet.
NFPA 58, §6.4.5.2

LP-gas containers must be located at least 10 feet from the centerline of the wall of diked areas containing flammable or combustible liquids.
NFPA 58, §6.4.5.4

The minimum horizontal separation between aboveground LP-gas containers and aboveground tanks containing liquids having flash points below 200°F is 20 feet.
NFPA 58, §6.4.5.5

An aboveground container and any of its parts must not be located within 6 feet of a vertical plane beneath overhead electric power lines that are over 600 volts, nominal.
NFPA 58, §6.4.5.12

Fire Protection

LP-gas fires must not be extinguished until the source of the burning gas has been shut off.
NFPA 58, §6.25.4.3

SAMPLE QUESTION

Which of the following is not required information on the ASME nameplate of a stationary storage container constructed prior to September 1, 1984?

A. The name of the manufacturer
B. The ASME code symbol
C. The manufacturer's serial number
D. The container's water capacity

Answer: B

5. Piping System, Inspection and Testing

NFPA 58

Piping Protection Requirements

Aboveground piping must be supported and protected against physical damage by vehicles.
NFPA 58, §6.9.3.10

The portion of aboveground piping in contact with a support or a corrosion-causing substance must be protected against corrosion.
NFPA 58, §6.9.3.11

Title 49, Code of Federal Regulations

Periodic test and inspection. Each specification cargo tank must be tested and inspected by an inspector meeting the qualifications. The retest date shall be determined from the specified interval identified from the most recent inspection or the CTMV certification date.

Test or Inspection	Interval Period
External Visual Inspection	1 year
Internal Visual Inspection	5 years
Leakage Test	1 year
Pressure Test	5 years

49 CFR §180.407(c)

External Visual Inspection and Pressure Testing of Cargo Tanks

The external visual inspection and testing must include as a minimum the following:

(i) The tank shell and heads must be inspected for corroded or abraded areas, dents, distortions, defects in welds and any other conditions, including leakage, that might render the tank unsafe for transportation service;

(ii) The piping, valves, and gaskets must be carefully inspected for corroded areas, defects in welds, and other conditions, including leakage, that might render the tank unsafe for transportation service;

(iii) All devices for tightening manhole covers must be operative and there must be no evidence of leakage at manhole covers or gaskets;

(iv) All emergency devices and valves including self-closing stop valves, excess flow valves and remote closure devices must be free from corrosion, distortion, erosion and any external damage that will prevent safe operation. Remote closure devices and self-closing stop valves must be functioned to demonstrate proper operation;

(v) Missing bolts, nuts and fusible links or elements must be replaced, and loose bolts and nuts must be tightened;

(vi) All markings on the cargo tank must be legible;

(vii) [Reserved]

(viii) All major appurtenances and structural attachments on the cargo tank including, but not limited to, suspension system attachments, connecting structures, and those elements of the upper coupler (fifth wheel) assembly that can be inspected without dismantling the upper coupler (fifth wheel) assembly must be inspected for any corrosion or damage which might prevent safe operation.
49 CFR §180.407(d)(2)

Pressure Test Procedure

As part of the pressure test, the inspector must perform an external and internal visual inspection, except that on a cargo tank not equipped with a manhole or inspection opening, an internal inspection is not required.
49 CFR §180.407(g)

Emergency Equipment Inspection and Use

No commercial motor vehicle shall be driven unless the driver is satisfied that the emergency equipment is in place and ready for use; nor shall any driver fail to use or make use of such equipment when and as needed.
49 CFR §392.8

Driver Vehicle Inspection Reports (DVIR)

Report required. Every motor carrier shall require its drivers to report, and every driver shall prepare a report in writing at the completion of each day's work on each vehicle operated and the report shall cover at least the following parts and accessories:

> Service brakes, including trailer brake connections; parking (hand) brake; steering mechanism; lighting devices and reflectors; tires; horn; windshield wipers; rear vision mirrors; coupling devices; wheels and rims; and emergency equipment.
> ***49 CFR §396.11(a)***

Report content. The report shall identify the vehicle and list any defect or deficiency discovered by or reported to the driver which would affect the safety of operation of the vehicle or result in its mechanical breakdown. If no defect or deficiency is discovered by or reported to the driver, the report shall so indicate. In all instances, the driver

must sign the report. On two-driver operations, only one driver needs to sign the driver vehicle inspection report, provided both drivers agree as to the defects or deficiencies identified. If a driver operates more than one vehicle during the day, a report shall be prepared for each vehicle operated.
49 CFR §396.11(b)

Corrective action. Prior to requiring or permitting a driver to operate a vehicle, every motor carrier or its agent must repair any defect or deficiency listed on the driver vehicle inspection report which would be likely to affect the safety of operation of the vehicle.

(1) Every motor carrier or its agent must certify on the original driver vehicle inspection report which lists any defect or deficiency that the defect or deficiency has been repaired or that repair is unnecessary before the vehicle is operated again.

(2) Every motor carrier must maintain the original driver vehicle inspection report, the certification of repairs, and the certification of the driver's review for three months from the date the written report was prepared.
49 CFR §396.11(c)

Driver Inspection

Before driving a commercial motor vehicle, the driver must:

(a) Be satisfied that the motor vehicle is in safe operating condition;

(b) Review the last driver vehicle inspection report; and

(c) Sign the report, only if defects or deficiencies were noted by the driver who prepared the report, to acknowledge that the driver has reviewed it and that there is a certification that the required repairs have been performed. The signature requirement does not apply to listed defects on a towed unit which is no longer part of the vehicle combination.
49 CFR §396.13

SAMPLE QUESTION

If the metallic piping between a propane container and a building is exposed aboveground, is it acceptable for a transport driver to fill the container?

A. Yes, if the piping is supported
B. Yes, if the piping is protected against physical damage
C. Yes, if the portion of aboveground piping in contact with a support or corrosion-causing substance is protected against corrosion
D. No; all piping between a propane container and a building must be buried.

Answer: D

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