TEXAS LP-GAS EXAMINATION STUDY GUIDE

Transport Driver
Employee Level

RAILROAD COMMISSION OF TEXAS

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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 bobtail 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, 2017)
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* in PDF format free online at www.rrc.state.tx.us. If you need printed copies, they may be purchased for $10.00, tax included, by calling the Railroad Commission's publications office at (512) 463-7309.

You may also order NFPA manuals online at www.nfpa.org; click on "Codes and Standards."

The full current text of 49 CFR can also be viewed online. Go to http://ecfr.gov and select "Title 49—Transportation."

Sections and Topics

Before you take this examination, you should know the definitions found in this study guide and the contents of the sections of the codes and standards listed below. The actual examination questions may not cover all of the listed sections and topics.

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.

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

Railroad Commission *LP-Gas Safety Rules*

NOTE: Section (§) 9.402(c) of the *LP-Gas Safety Rules* states, "The Commission does not adopt language in any NFPA rule, chart, figure, or table pertaining to any LP-gas container having a water capacity of one gallon (4.2 pounds LP-gas capacity) or less."

Alternative Fuel Safety (AFS). The RRC department responsible for LP-Gas training and inspection.
LP-Gas Safety Rules, §9.2(1)

LP Gas Safety Rules. The rules adopted by the Railroad Commission in the Texas Administrative Code, Title 16, Part 1, Chapter 9, including any NFPA or other documents adopted by reference. The official text of the Commission's rules is that which is on file with the Secretary of State's office and available at www.sos.state.tx.us or through the Commission's web site
LP-Gas Safety Rules, §9.2(22)

Mobile fuel container. An LP-gas container mounted on a vehicle to store LP-gas as the fuel supply to an auxiliary engine other than the engine to propel the vehicle or for other uses on the vehicle.
LP-Gas Safety Rules, §9.2(25)

Motor fuel container. An LP-gas container mounted on a vehicle to store LP-gas as the fuel supply to an engine used to propel the vehicle.
LP-Gas Safety Rules, §9.2(27)

Rules examination. The Commission's written examination that measures an examinee's working knowledge of Chapter 113 of the Texas Natural Resources Code and/or the current LP-Gas Safety Rules.
LP-Gas Safety Rules, §9.2(41)

NFPA 58 (2017)

ASME. American Society of Mechanical Engineers.
NFPA 58, §3.3.6

Container. Any vessel, including cylinders, tanks, portable tanks, and cargo tanks, used for the transporting or storing of LP-Gases.
NFPA 58, §3.3.14

Container Appurtenances. Devices installed in container openings for safety, control, or operating purposes. [Examples include pressure-relief devices; shutoff valves, backflow check valves, excess-flow valves and internal valves; liquid level gauges; pressure gauges; and plugs].
NFPA 58, §3.3.15

DOT. U.S. Department of Transportation
NFPA 58, §3.3.24

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, §3.3.34.1

Fixed Maximum Liquid Level Gauge ["bleeder valve," "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, §3.3.34.2

Flexible Connector. A short [not exceeding 60 inches overall length] fixed piping system component that is fabricated from a flexible material and equipped with connections at both ends.

Flexible Hose Connector. A component fabricated from LP-Gas hose that is made from a material that is compatible with LP-Gas

Flexible Metallic Connector. A component fabricated from metallic material that provides liquid and vapor LP-Gas confinement and is provided with connections on both ends

Maximum Allowable Working Pressure (MAWP). The maximum pressure at which a pressure vessel is to operate as described by the ASME Boiler and Pressure Vessel Code
NFPA 58, § 3.3.47

Liquefied Petroleum Gas (LP-Gas). Any material having a vapor pressure not exceeding that allowed for commercial propane that is composed predominantly of the following hydrocarbons, either by themselves (except propylene) or as mixtures: propane, propylene, butane (normal butane or isobutane), and butylenes.
NFPA 58, §3.3.43

NFPA. National Fire Protection Association.
NFPA 58, §3.3.53

Point of Transfer. The location where connections and disconnections are made or where LP-Gas is vented to the atmosphere in the course of transfer operations.
NFPA 58, §3.3.60

Portable Container. A container designed to transport LP-Gas.
NFPA 58, §3.3.61

Pressure Relief Device ["popoff valve"]. A device designed to open to prevent a rise of internal pressure in excess of a specified value.
NFPA 58, §3.3.65

Sources of Ignition. Devices or equipment that, because of their modes of use or operation, are capable of providing sufficient thermal energy to ignite flammable LP-Gas vapor–air mixtures when introduced into such a mixture or when such a mixture comes into contact with them, and that will permit propagation of flame away from them.
NFPA 58, §3.3.78

Volumetric Method Filling. Filling a container to not more than the maximum permitted liquid volume.
NFPA 58, §3.3.26.1

Water Capacity ["WC"]. The amount of water at 60°F (16°C) required to fill a container.
NFPA 58, §3.3.90

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.
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 shut off 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)

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

Sample Question 1

What is a component fabricated from LP-Gas hose that is made from a material that is compatible with LP-Gas?

A. Flexible Connector
B. Flexible Hose Connector
C. Flexible Metallic Connector
D. Flexible LP-Gas Connector

Answer on last page.

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 key topics. When you take the examination, read each question very carefully.

ADMINISTRATIVE RULES - GENERAL REQUIREMENTS

Company License

No person may engage in any LP-gas activity until that person has obtained a license from the Commission authorizing the LP-gas activities.
LP-Gas Safety Rules, §9.7(a)

Licensees, registered manufacturers, company representatives, and operations supervisors at each outlet shall have copies of all current licenses and/or manufacturer registrations and certificates for employees at that location available for inspection during regular business hours.
LP-Gas Safety Rules, §9.7(c)

Application for a New Certificate

An applicant for a new certificate shall:
(1) file with AFS a properly completed LPG Form 16 and the applicable nonrefundable rules examination fee specified in §9.10 of this title (relating to Rules Examination); pass the applicable rules examination with a score of at least 75%
(2) pass the applicable rules examination with a score of at least 75%; and
(3) complete any required training and/or AFT in §9.51 and §9.52 of this title.
LP-Gas Safety Rules, §9.8(c)

Certificate Renewal

Certificate holders shall remit the nonrefundable $35 annual certificate renewal fee to AFS on or before May 31 of each year. Individuals who hold more than one certificate shall pay only one annual renewal fee.

(1) Failure to pay the nonrefundable annual renewal fee by the deadline shall result in a lapsed certificate

(A) To renew a lapsed certification, the individual must pay the nonrefundable $35 annual renewal fee plus a nonrefundable $20 late-filing fee.
(B) If an individual's certificate lapses or expires, that individual shall immediately cease performance of any LP-gas activities authorized by the certificate.
(C) If an individual's certificate has been expired for more than two years from May 31 of the year in which the certificate lapsed, that individual shall comply with the requirements in §9.8 of this title (relating to Requirements and Application for a New Certificate) or §9.13 of this title.
LP-Gas Safety Rules, §9.9(c)

Continuing education. A certificate holder shall complete at least eight hours of continuing education every four years as specified in this subsection.

(1) Upon fulfillment of this requirement, the certificate holder's next continuing education deadline shall be four years after the May 31 following the date of the most recent class the certificate holder has completed, unless the course was completed on May 31, in which case the deadline shall be four years from that date.
LP-Gas Safety Rules, §9.52(b)

Rules Examination

Failure of any exam shall immediately disqualify the individual from performing any LP-gas related activities covered by the exam which is failed, except for activities covered by a separate exam which the individual has passed.
LP-Gas Safety Rules, §9.10(f)

Trainees

A licensee or ultimate consumer may employ an individual as a trainee for a period not to exceed 45 calendar days without that individual having successfully completed the rules examination

(1) The trainee shall be directly and individually supervised at all times by an individual who has successfully completed the Commission's rules examination for the areas of work being performed by the trainee.
LP-Gas Safety Rules, §9.12

Qualified Personnel

Persons whose duties fall within the scope of this code shall be provided with training that is consistent with the scope of their job activities and that includes proper handling and emergency response procedures.
NFPA 58, §4.4.1

Refresher training shall be provided at least every 3 years.
NFPA 58, §4.4.3

Initial and subsequent refresher training shall be documented.
NFPA 58, §4.4.4

Transfer of LP-Gas to and from a container shall be accomplished only by qualified individuals trained in proper handling and operating procedures.
NFPA 58, §7.2.2.1

At least one qualified person shall 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

Public access to areas where LP-Gas is stored and transferred shall be prohibited except where necessary for the conduct of normal business activities.
NFPA 58, §7.2.3.1

Vehicle Requirements

To register a unit previously unregistered in Texas, the operator of the unit shall:
(A) pay to AFS the $270 registration fee for each bobtail truck, semitrailer, container delivery unit, or other motor vehicle equipped with LP-gas cargo tanks;
(B) file a properly completed LPG Form 7
LP-Gas Safety Rules, §9.202(a)(1)

When all registration or transfer requirements have been met, AFS shall issue LPG Form 4 which shall be properly affixed in accordance with the placement instructions on the form.

(1) A person shall not operate an LP-gas transport unit or container delivery unit in Texas unless the LPG Form 4 has been properly affixed or unless its operation has been specifically approved by AFS.
(2) A person shall not introduce LP-gas into a transport container unless that unit bears an LPG Form 4 or unless specifically approved by AFS.
(6) If an LPG Form 4 decal on a unit currently registered with AFS is destroyed, lost, or damaged, the operator of that vehicle shall obtain a replacement decal by filing LPG Form 18B and a $50 replacement fee with AFS.
LP-Gas Safety Rules, §9.202(c)

Sample Question 2

A certificate holder shall complete at least eight hours of continuing education every _____ as specified in this subsection.

A. Year
B. 2 Years
C. 3 Years
D. 4 Years

Answer on last Page

Regulations for Operating a Transport

Driver Vehicle Inspection

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

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-§396.7 (b)

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. The report shall cover at least the following parts and accessories:
(i) Service brakes including trailer brake connections;
(ii) Parking brake;
(iii) Steering mechanism;
(iv) Lighting devices and reflectors;
(v) Tires;
(vi) Horn;
(vii) Windshield wipers;
(viii) Rear vision mirrors;
(ix) Coupling devices;
(x) Wheels and rims;
(xi) Emergency equipment.
49-§396.11 (a)(1)

Report content. (i) The report must 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 a driver operates more than one vehicle during the day, a report must be prepared for each vehicle operated. Drivers are not required to prepare a report if no defect or deficiency is discovered by or reported to driver.

(ii)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.
49-§396.11 (a)(2)

Corrective action. (i) Prior to requiring or permitting a driver to operate a vehicle, every motor carrier or its agent shall 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.
(ii) Every motor carrier or its agent shall certify on the 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.
49-§396.11 (a)(3)

Retention period for reports. Every motor carrier shall maintain the 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-§396.11 (a)(4)

Before driving a motor vehicle, the driver shall:
(a) Be satisfied that the motor vehicle is in safe operating condition;
(b) Review the last driver vehicle inspection report if required by §396.11(a)(2)(i); and
(c) Sign 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-§396.13

Tires

No motor vehicle shall be operated on any tire that—
(1) Has body ply or belt material exposed through the tread or sidewall,
(2) Has any tread or sidewall separation,
(3) Is flat or has an audible leak, or
(4) Has a cut to the extent that the ply or belt material is exposed.
49-§393.75 (a)

Any tire on the front wheels of a bus, truck, or truck tractor shall have a tread groove pattern depth of at least 4⁄32 of an inch when measured at any point on a major tread groove. The measurements shall not be made where tie bars, humps, or fillets are located.
49-§393.75 (b)

Except as provided in paragraph (b) of this section, tires shall have a tread groove pattern depth of at least $^{2}/_{32}$ of an inch when measured in a major tread groove. The measurement shall not be made where tie bars, humps or fillets are located
49-§393.75 (c)

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-§392.8

Each cargo tank vehicle or tractor shall be provided with at least one portable fire extinguisher in accordance with Section 4.7 having a minimum capacity of 18 lb dry chemical.
NFPA 58, §9.4.7.1

LP-Gas fires shall not be extinguished until the source of the burning gas has been shut off.
NFPA 58, §6.29.4.3

Only electrical lighting shall be used with the vehicles covered by this chapter.
NFPA 58, §9.2.1

Vehicle Markings

In addition to NFPA 58 §9.4.6.2, each LP-gas transport and container delivery unit in LP-gas service shall be marked on each side and the rear with the name of the licensee or the ultimate consumer operating the unit. Such lettering shall be legible and at least two inches in height and in sharp color contrast to the background. AFS shall determine whether the name marked on the unit is sufficient to properly identify the licensee or ultimate consumer operating the unit.
LP-Gas Safety Rules, §9.211

Reflective design. Every uninsulated cargo tank permanently attached to a cargo tank motor vehicle shall, unless covered with a jacket made of aluminum, stainless steel, or other bright nontarnishing metal, be painted a white, aluminum, or similar reflecting color on the upper two-thirds of area of the cargo tank.
49-§178.337-1(d)

Each transport vehicle containing any quantity of a hazardous material must be placarded on each side and each end of container.
49-§172.504(a)

When hazardous materials covered by table 2 of this section are transported by highway, placards are not required on a transport vehicle or freight container which contains less than 1001 pounds aggregate gross weight of hazardous materials.
49-§172.504(c)(1)

Each cargo tank transporting a Class 2 material must be marked, in lettering no less than 2.0 inches, on each side and each end with an appropriate common name for the material (e.g., "LP-Gas Gas or Propane").
49-§172.328(b)

Sample Question 3

Only _____ lighting shall be used with the vehicles.

A. Explosion proof
B. Florescent
C. Electrical
D. LED
E. Outdoor

Answer on last page.

Hoses and Flexible connectors

Hose, hose connections, and flexible connectors must be fabricated of materials that are resistant to the action of LP-Gas both as liquid and vapor.
NFPA 58, §5.11.6.1

Hose, hose connections, and flexible connectors used for conveying LP-Gas liquid or vapor at pressures in excess of 5 psig,
(A) Hose shall be designed for a working pressure of at least 350 psig, with a safety factor of 5 to 1
(B) Hose shall be continuously marked to provide at least the following information:
(1) LP-GAS HOSE or LPG HOSE
(2) Maximum working pressure
(3) Manufacturers' name or coded designation
(4) Month or quarter and year of manufacture
(5) Product identification
NFPA 58, §5.11.6.4

Flexible connectors used in the piping system to compensate for stresses and vibration shall be limited to 3 ft. in overall length and, when replaced, shall comply with 5.11.6.
NFPA 58, §9.4.3.6

Flexible hose connectors shall be permanently marked to indicate the date of installation of the flexible hose connector.
NFPA 58, §9.4.3.7(1)

The flexible hose portion of the connector shall be replaced within 10 years of the installation of the connector and visually inspected before the first delivery of each day.
NFPA 58, §9.4.3.7(2)

Hose identification. By July 1, 2000, the operator must assure that each delivery hose assembly is permanently marked with a unique identification number and maximum working pressure.
49-§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-§180.416(c)

Protection of Cargo Tank Appurtenances, Piping System and Equipment

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

Discharge System Inspection

Monthly inspections and tests.
(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. On cargo tanks equipped with a meter, the meter creep test as outlined in appendix B to this part or a test providing equivalent accuracy is acceptable.
(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 manufacturer of the hose assembly, 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. The operator must retain a copy of each test and inspection record 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-§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.
49-§180.416(e)

Rejection criteria. 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.
49-§180.416(g)(1)

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) of this section.
(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-§180.416(g)(2)

All LP-gas vehicles and vehicle containers, valves, dispensers, accessories, piping, transfer equipment, gas container, gas utilization equipment, and appliances shall be maintained in safe working order and in accordance with the manufacturer's instructions and the rules in this chapter.
LP-Gas Safety Rules, §9.204

Testing and Inspection

Each transport container unit required to be registered with AFS shall be tested in accordance with 49 CFR 180.407, relating to requirements for test and inspection of specification cargo tanks. The tests shall be conducted by any individual authorized by the United States Department of Transportation.
LP-Gas Safety Rules, §9.208

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-§180.407(c)

The external visual inspection and testing must include as a minimum the following:
(i) The tank shell and heads
(ii) The piping, valves, and gaskets
(iii) All devices for tightening manhole covers
(iv) All emergency devices and valves including self-closing stop valves, excess flow valves and remote closure devices. Must be functioned to demonstrate proper operation.
(v) Missing bolts, nuts and fusible links
(vi) All markings on the cargo tank required by parts 172, 178 and 180 must be legible;
(viii) All major appurtenances and structural attachments on the cargo tank
49-§180.407(d)(2)

Each cargo tank successfully completing the test and inspection requirements contained in §180.407 must be marked as specified in this section.
49-§180.415(a)

Each cargo tank must be durably and legibly marked, in English, with the date (month and year) and the type of test or inspection performed, subject to the following provisions:
(1) The date must be readily identifiable with the applicable test or inspection.
(2) The markings must be in letters and numbers at least 1.25 inches high, near the specification plate or anywhere on the front head.
49-§180.415(b)

The type of test or inspection may be abbreviated as follows:
(i) V for external visual inspection and test;
(ii) I for internal visual inspection;
(iii) P for pressure test;
(iv) L for lining inspection;
(v) T for thickness test; and
(vi) K for leakage test
49-§180.415(b)(3)

Sample Question 4

At least once each _____ 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.

A. Year
B. Month
C. Week
D. Day

Answer on last page

Discharge System Control

Operating procedure. Each operator of a cargo tank motor vehicle that is subject to the emergency discharge control requirements 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-§177.840(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 §180.416(g)(1) or with piping systems found to have any condition identified in §180.416(g)(2)
49-§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-§177.840(n)

Unloading procedures for liquefied petroleum gas and anhydrous ammonia in other than metered delivery service. An operator must use the following procedures for 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-§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-§177.840(r)

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-§173.315(n)(2)

Shipping Papers

A driver of a motor vehicle containing hazardous material, and each carrier using such a vehicle, shall ensure that the shipping paper required by this section is readily available to, and recognizable by, authorities in the event of accident or inspection. Specifically, the driver and the carrier shall:

(1) Clearly distinguish the shipping paper, if it is carried with other shipping papers or other papers of any kind, by either distinctively tabbing it or by having it appear first; and
(2) Store the shipping paper as follows:
When the driver is at the vehicle's controls, the shipping paper shall be:
(A) Within his immediate reach while he is restrained by the lap belt; and
(B) either readily visible to a person entering the driver's compartment or in a holder which is mounted to the inside of the door on the driver's side of the vehicle.
49-§177.817(e)

When the driver is not at the vehicle's controls, the shipping paper shall be:
(A) In a holder which is mounted to the inside of the door on the driver's side of the vehicle; or
(B) on the driver's seat in the vehicle.
49-§177.817(e)(2)(ii)

The shipping description of a hazardous material on the shipping paper must include:
(1) The identification number prescribed for the material
(2) The proper shipping name prescribed for the material
(3) The hazard class or division number prescribed for the material
49-§172.202(a)

The total quantity of hazardous materials covered by the description must be indicated (by mass or volume, or by activity for Class 7 materials) and must include an indication of the applicable unit of measurement,
49-§172.202(a)(5)

Bulk packages, provided some indication of the total quantity is shown, for example, "1 cargo tank"
49-§172.202(a)(5)(A)

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" to indicate the suitability for shipping "Noncorrosive" liquefied petroleum gas in a cargo tank made of quenched and tempered steel.
49-§172.203(h)(2)

Manifests

(a) All manifests or bills of lading shall 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 shall be given to the entity receiving the shipment.
(b) This requirement shall not apply to loads covered by permanent shipping papers authorized by DOT.
(c) Manifests shall be made available to the Commission upon request
LP-Gas Safety Rules, §9.212

Sample Question 5

When the driver is not at the vehicle's controls, the shipping paper shall be on the driver's side door or the _____.

A. Driver's seat
B. Passengers seat
C. Center console
D. Drivers sun visor

Answer on last page.

Operation of Transfer Systems

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

Internal combustion engines within 15 ft of a point of transfer shall be shut down while such transfer operations are in progress, with the exception of the following:
(1) Engines of LP-Gas cargo tank vehicles, constructed and operated in compliance with Chapter 9, while such engines are driving transfer pumps or compressors on these vehicles to load containers.
NFPA 58, §7.2.3.2(A)

Smoking, open flame, portable electrical tools, and extension lights capable of igniting LP-Gas shall not be permitted within 25 ft 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 shall be at least 10 ft. 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

Transfer shall be made by a pump or compressor mounted on the vehicle or by a transfer means at the delivery point.
NFPA 58, §9.4.1.2

Odorization

All LP-Gases shall be odorized prior to being loaded into a railcar or cargo tank motor vehicle by the addition of a warning agent of such character that the gases are detectable by a distinct odor to a concentration in air of not over one-fifth the lower limit of flammability.
NFPA 58, §4.2.1

The addition of the odorant shall be documented at the point of odorization.
NFPA 58, §4.2.2

The presence of the odorant shall be verified by sniff-testing or other means and the results documented prior to final delivery to the end-use customer**.**
NFPA 58, §4.2.3

Loading the Cargo Tank

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-§177.834(i)

loading of a liquefied gas into a cargo tank or portable tank shall be determined by weight or by a suitable liquid level gauging device.
49-§173.315(c)

If a cargo tank is to be loaded using a fixed maximum liquid indicator. It shall be arranged to function at a level not to exceed the maximum permitted volume. Loading shall be stopped when the device functions.
49-§173.315(f)

Additional gauging devices may be installed but may not be used as primary controls for filling of cargo tanks.
49-§173.315(h)

Bulk Plant Stationary Storage, Inspection, and Safety Requirements

All LP-gas storage containers, valves, dispensers, accessories, piping, transfer equipment, gas utilization equipment, and appliances shall be installed and maintained in safe working order and in accordance with the manufacturer's instructions and the rules in this chapter. If any one of the LP-gas storage containers, valves, dispensers, accessories, piping, transfer equipment, gas utilization equipment, and appliances is not in safe working order, AFS may require that the installation be immediately removed from LP-gas service and not be operated until the necessary repairs have been made.
LP-Gas Safety Rules, §9.113

A licensee or the licensee's employees shall not introduce LP-gas into any container or cylinder if the licensee or employee has knowledge or reason to believe that such container, cylinder, piping, or the system or the appliance to which it is attached is unsafe or is not installed in accordance with the statutes or the rules in this chapter.
LP-Gas Safety Rules, §9.135

System Protection Requirements

Stationary LP-gas installations, including LP-gas transfer systems, dispensing systems, and storage containers, shall be protected from tampering and damage.
LP-Gas Safety Rules, §9.140

Fencing at LP-gas installations shall comply with the following:
(1) Uprights, braces, and cornerposts of the fence shall be composed of noncombustible material.
(2) Gates in fences where bulkheads are installed shall be located directly in front of the bulkhead. Gates shall be locked whenever the area enclosed is unattended. Gate posts on gates installed directly in front of the bulkhead shall be located at 45-degree angles to the nearest corner of the bulkhead.
(3) ASME containers or manual dispensers originally manufactured to or modified to be considered by AFS as selfcontained units. Self-contained units shall be protected as specified in subsection (d) of this section.
(4) LP-gas containers located at a private residence are exempt from the fencing requirements.
LP-Gas Safety Rules, §9.140(c)

Vehicular barrier protection at LP-gas installations, except as noted in this section, shall comply with the following:
(1) Vertical supports for vehicular barrier protection shall be at least three-inch schedule 40 steel pipe or other material with equal or greater strength. The vertical supports shall be capped on the top or otherwise protected to prevent the entrance of water or debris; anchored in concrete at least 18 inches below the ground; and rise at least 30 inches above the ground. Supports shall be spaced four feet apart or less.
(2) The horizontal guardrailing for vehicular barrier protection shall be secured to the top of the vertical supports at least 30 inches above the ground.
(3) Openings in horizontal guardrailing, except the opening that is permitted directly in front of a bulkhead, shall not exceed three feet.
(4) Clearance of at least three feet shall be maintained between the vehicular barrier protection and any part of an LP-gas transfer system or container or clearance of two feet for retail service station installations.
(5) Vehicular barrier protection shall extend at least three feet beyond any part of the LP-gas transfer system or container which is exposed to collision damage or vehicular traffic.
LP-Gas Safety Rules, §9.140(d)

ASME containers, except vaporizers, shall be painted white or aluminum, or any other heat-reflective color (such as light green, light blue, etc.). Darker, heat-absorbing colors (such as black, navy blue, etc.) shall not be permitted.
LP-Gas Safety Rules, §9.141(a)(1)

Horizontal ASME containers designed for permanent installation in stationary service above ground shall be placed on masonry or other noncombustible structural supports located on concrete or masonry foundations with the container supports. Containers shall not be in contact with the soil.
NFPA 58, §6.8.3.1;(with changes per LP-Gas Safety Rules 9.403)

Name Plate and Markings on ASME Containers

LP-gas shall not be introduced into an ASME container unless the container is equipped with an original nameplate or at least one of the nameplates defined in this subsection permanently attached to the container.

(1) Commission identification nameplate-- attached by an authorized representative of the Commission
(2) Duplicate nameplate-- issued by the original manufacturer
(3) Modification (or alteration) nameplate--A nameplate issued and affixed by an ASME Code facility
(4) Replacement nameplate-- issued and affixed by the original manufacturer or its successor company
LP-Gas Safety Rules, §9.129(a)

Nameplates on stationary ASME containers built prior to September 1, 1984, shall include at least
(1) the name of container manufacturer;
(2) the manufacturer's serial number;
(3) the container's working pressure;
(4) the container's water capacity; and
(5) the ASME Code symbol
LP-Gas Safety Rules, §9.129(d)

Sample Question 6

Vertical supports for vehicular barrier protection shall be anchored in concrete at least ____ inches below the ground.

A. 6
B. 12
C. 18
D. 24

Answer on last page

Bulkheads

All new stationary LP-gas installations with individual or aggregate water capacities of 4,001 gallons or more shall:
(1) install a vertical bulkhead
(2) install one of the following in all container openings 1 1/4 inches or greater
(A) pneumatically-operated emergency shutoff valves (ESV);
(B) pneumatically-operated internal valves;
(C) pneumatically-operated API 607 ball valves; or
(D) a backflow check valve may be installed where the flow is in one direction into the container
LP-Gas Safety Rules, §9.143(a)

Bulkheads, whether horizontal or vertical, shall comply with the following requirements:
(1) Bulkheads shall be installed for both liquid and vapor return piping
(2) No more than two transfer hoses shall be attached to a pipe riser. If two hoses are simultaneously connected to one or two transports, the use of the two hoses shall not prevent the activation of the ESV in the event of a pull away;
(3) Both liquid and vapor transfer hoses shall be plugged or capped when not in use;
(4) Bulkheads shall 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.
LP-Gas Safety Rules, §9.143(e)(1)-(4)

Stationary LP-gas installations with individual or aggregate water capacities of 4,001 gallons or more are exempt from subsections (a) through (c) of this section provided:
(1) each container is filled solely through a 1 3/4 inch double back check filler valve installed directly into the container;
(2) at least one clearly identified and easily accessible manually operated remote emergency shutoff device shall 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)

Transportation in Cargo Tank Vehicles

All LP-Gas cargo tank vehicles, whether used in interstate or intrastate service, shall comply with the applicable portion of the U.S. Department of Transportation Hazardous Materials Regulations of the DOT Federal Motor Carrier Safety Regulations (49 CFR, Parts 171–180, 393, 396, and 397)
NFPA 58, §9.4.1.3

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, except external emergency self-closing valves on MC 338 cargo tanks containing the residue of cryogenic liquids may remain either open or closed during transit.
49-§177.834(j)

Main shutoff valves on a container for liquid and vapor shall be readily accessible without the use of tools, or other equipment shall be provided to shut off the container valves.
NFPA 58, §11.8.4.3

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-§177.840(g)

No person shall smoke or carry lighted smoking material as follows:
(1) On or within 25 ft of a vehicle that contains LPGas liquid or vapor
(2) At points of liquid transfer
(3) When delivering or connecting to containers
NFPA 58, §9.4.10

Parking and Garaging Vehicles

Any unit registered with the Commission shall utilize a wheel stop, in addition to the parking or hand brake, whenever the unit is loading, unloading, or parked, to prevent the unit from unintended movement.
NFPA 58, §9.4.8;(with changes per LP-Gas Safety Rules 9.403)

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

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

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

Sample Question 7

Each liquid discharge valve on a cargo tank motor vehicle, other than an engine fuel line valve, must be _____ during transportation except during loading and unloading.

A. open
B. purged
C. locked
D. removed
E. closed

Answer on last page

LP-Gas System Installation

Container Installation

Table 6.4.1.1 Separation Distances Between Containers, Important Buildings, and Line of Adjoining Property That Can Be Built Upon

Water Capacity per Container		Minimum Distances					
		Mounded or Underground Containers[a]		Aboveground Containers		Between Containers[b]	
gal	m^3	ft	m	ft	m	ft	m
<125[c]	<0.5[c]	10	3	0[d]	0[d]	0	0
125–250	0.5–1.0	10	3	10	3	0	0
251–500	>1.0–1.9	10	3	10	3	3	1
501–2,000	>1.9–7.6	10	3	25[c]	7.6	3	1
2,001–30,000	>7.6–114	50	15	50	15	5	1.5
30,001–70,000	>114–265	50	15	75	23	¼ of sum of diameters of adjacent containers	
70,001–90,000	>265–341	50	15	100	30		
90,001–120,000	>341–454	50	15	125	38		
120,001–200,000	>454–757	50	15	200	61		
200,001–1,000,000	>757–3,785	50	15	300	91		
>1,000,000	>3,785	50	15	400	122		

Combustible materials shall not accumulate or be stored within 10 ft (3 m) of a container.
NFPA 58, §6.5.3.3

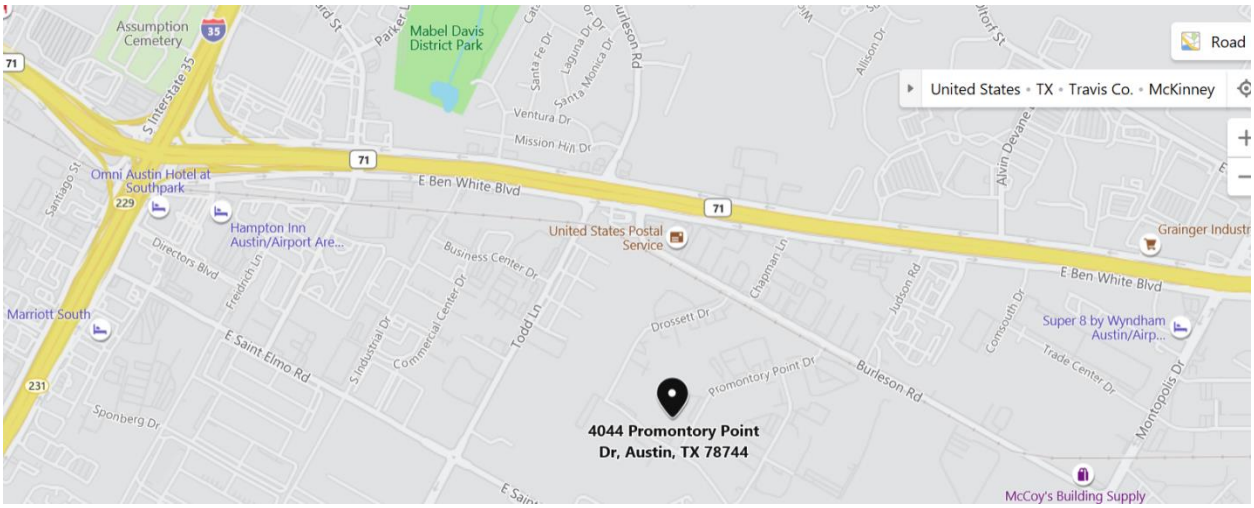
LP-Gas containers shall be located at least 10 ft (3 m) from the centerline of the wall of diked areas containing Class I flammable or Class II combustible liquids.
NFPA 58, §6.5.3.5

The minimum horizontal separation between aboveground LP-Gas containers and aboveground tanks containing liquids having flash points below 200°F shall be 20 ft.
NFPA 58, §6.5.3.6

An aboveground LP-Gas container and any of its parts shall not be located within 6 ft (1.8 m) of a vertical plane beneath overhead electric power lines that are over 600 volts, nominal.
NFPA 58, §6.5.3.13

ALTERNATIVE FUELS TRAINING CENTER

4044 Promontory Point Austin Texas 78744



Sample Question Answers

1. B
2. D
3. C
4. B
5. A
6. C
7. E