

TEXAS LP-GAS EXAMINATION STUDY GUIDE

ASME Motor /Mobile
Fuel Dispenser
Employee Level



RAILROAD COMMISSION OF TEXAS

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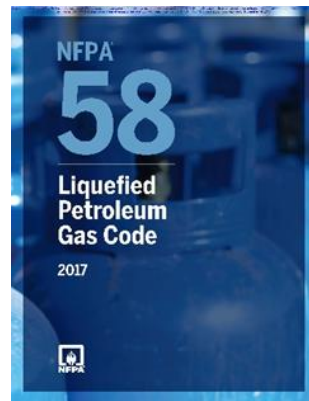
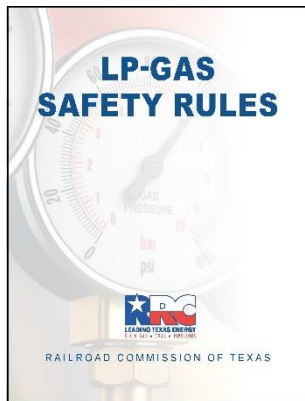
LP-GAS EXAMINATION STUDY GUIDE EMPLOYEE-LEVEL ASME Motor/Mobile Fuel Dispenser

Who should use this guide?

You should use this guide if you plan to take the Railroad Commission’s employee-level motor/mobile fuel dispenser examination. This exam will qualify you to inspect and fill American Society of Mechanical Engineers (ASME) motor- fuel and mobile-fuel containers on vehicles, including recreational vehicles, cars, trucks, and buses.

This examination will not qualify you to fill DOT LP-gas cylinders or stationary containers.

What books do I need?



This examination tests your knowledge of the laws and standards that apply to motor fuel and mobile fuel container filling operations in Texas. These laws and standards are found in two books:

LP-Gas Safety Rules (Texas Railroad Commission)

NFPA 58 Liquefied Petroleum Gas Code (National Fire Protection Association, 2017)

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.texas.gov. 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.”

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.

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.”

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*

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

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

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

Overfilling Prevention Device [“OPD,” “stop valve”]. A device that is designed to provide an automatic means to prevent the filling of a container beyond a predetermined level.
NFPA 58, §3.3.55

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

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

Sample Question 1

A pressure relief device is designed to _____ to prevent a rise of internal pressure in excess of a specified value.

- A. Close
- B. Eject
- C. Open
- D. Dissolve

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**Motor / Mobile Fuel Filler**

The Motor/Mobile Fuel Filler examination qualifies an individual to inspect and fill motor or mobile fuel containers on vehicles, including recreational vehicles, cars, trucks and buses.

The Motor/Mobile Fuel Filler exam does not authorize an individual to fill LP-gas cylinders or ASME stationary containers.

LP-Gas Safety Rules, §9.10(d)(1)(J)

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

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

Sample Question 2

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

- A. 3
- B. 4
- C. 8
- D. 16

Answer on last page

TRANSFER LOCATION RULES - GENERAL REQUIREMENTS

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

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

Transfer of LP-Gas to and from a container shall be accomplished only by qualified individuals trained in proper handling and operating procedures meeting the requirements of Section 4.4 and in emergency response procedures

NFPA 58, §7.2.2.1

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

Report of LP-Gas Incident/Accident

At the earliest practical moment or within two hours following discovery, a licensee owning, operating, or servicing equipment or an installation shall notify AFS by telephone of any event involving LP-gas which.

- (1) caused a death or any personal injury requiring hospitalization;
- (2) required taking an operating facility out of service;
- (3) resulted in unintentional gas ignition requiring an emergency response;
- (4) involved the LP-gas installation on any vehicle propelled by or transporting LP-gas;
- (5) caused an estimated damage to the property of the operator, others, or both totaling \$5,000 or more, including gas loss;
- (6) could reasonably be judged as significant because of rerouting of traffic, evacuation of buildings, or media interest even though it does not meet paragraphs (1) - (5) of this subsection; or
- (7) is required to be reported to any other state or federal agency (such as the Texas Department of Public Safety or the United States Department of Transportation).

LP-Gas Safety Rules, §9.36(a)

Each industrial plant, bulk plant, and distributing point shall be provided with at least one portable fire extinguisher having a minimum capacity of 18lb of dry chemical.

NFPA 58, §6.29.4.2

Have a minimum capacity of dry chemical with an A:B:C rating. (Required Fire Extinguishers)

NFPA 58, §4.7(2)

LP-Gas fires shall not be extinguished until the source of the burning gas has been shut off.

NFPA 58, §6.29.4.3

A licensee or the licensee's employees shall not introduce LP-Gas into any container or cylinder if the licensee or employee have 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**Sample Question 3**

AFS shall be notified _____ of any event involving LP-gas which caused a death or any personal injury requiring hospitalization

- A. in person
- B. by telephone
- C. in writing
- D. by email

Answer on last page

Ignition Sources

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.

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)

Metal cutting, grinding, oxygen–fuel gas cutting, brazing, soldering, or welding shall not be permitted within 35 ft of a point of transfer while filling operations are in progress.

NFPA 58, §7.2.3.2 (C)

Combustible materials shall not accumulate or be stored within 10 ft of a container.

NFPA 58, §6.5.3.3

Dispenser Rules

Where a vehicle fuel dispenser or dispensing system is installed under a weather shelter or canopy, the area shall be ventilated and shall not be enclosed for more than 50 percent of its perimeter.

NFPA 58, §6.27.3.3

An identified and accessible remote emergency shutoff device for either the internal valve or the emergency shutoff valve shall be installed not less than 3 ft or more than 100 ft from the liquid transfer point.

NFPA 58, §6.27.3.9

An identified and accessible switch or circuit breaker shall be installed at a location not less than 20 ft or more than 100 ft from the dispensing device(s) to shut off the power in the event of a fire, accident, or other emergency.

NFPA 58, §6.27.3.17

Hose, hose connections, and flexible connectors shall 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 shall be designed for a working pressure of 350 psig with a safety factor of 5 to 1

NFPA 58, §5.11.6.4 (A)

Hose assemblies shall be observed for leakage or for damage that could impair their integrity before each use.

NFPA 58, §7.2.4.1

These hose assemblies shall be inspected at least annually.

NFPA 58, §7.2.4.2

Inspection shall include the following:

- (1) Damage to outer cover that exposes reinforcement
- (2) Kinked or flattened hose
- (3) Soft spots or bulges in hose
- (4) Couplings that have slipped on the hose, are damaged, have missing parts, or have loose bolts
- (5) Leakage other than permeability leakage

NFPA 58, §7.2.4.3

A listed quick-acting shutoff valve or a listed quarter turn ball valve with a locking handle shall be installed at the discharge end of the transfer hose.

NFPA 58, §6.27.3.16, LP-Gas Safety Rules, §9.403

Hoses shall comply with the following:

- (1) Hose length shall not exceed 18 ft unless approved by the authority having jurisdiction.
- (2) All hoses shall be listed.
- (3) When not in use, hoses shall be secured to protect them from damage.

NFPA 58, §6.27.4.1

Each LP-gas private or public motor/mobile or forklift refueling installation which includes a liquid dispensing system shall incorporate into that dispensing system a breakaway device.

LP-Gas Safety Rules, §9.141(b)

Sample Question 4

Internal combustion engines within _____ ft of a point of transfer shall be shut down while such transfer operations are in progress

- A. 15
- B. 20
- C. 25
- D. 35

Answer on last page

System Protection Requirements

Areas that include features required in 6.21.4.1(2) shall be enclosed with a minimum 6 ft (1.8 m) high industrial type fence, chain-link fence, or equivalent protection

NFPA 58, §6.21.4.2

Uprights, braces, and corner posts of the fence shall be composed of noncombustible material

LP-Gas Safety Rules, §9.140(c)(1)

Fencing shall not be required where devices are provided that can be locked in place and prevent unauthorized operation of valves, equipment, and appurtenances.

NFPA 58, §6.21.4.2(D)

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.

LP-Gas Safety Rules, §9.140(d)(4)

In addition to NFPA 58 §5.2.8.1, LP-gas installations shall comply with the sign and lettering requirements specified in Table 1 of this subsection. An asterisk indicates that the requirement applies to the equipment or location listed in that column.

LP-Gas Safety Rules, §9.140(f)

(Partial chart shown below Full chart can be found in the 2020 LP- Gas Safety Rules)

Figure: 16 TAC §9.140(f)
§9.140. Uniform Protection Standards -- Table 1 (Revised February 2008)

Requirements	Self-service Dispenser Area	Storage Racks for DOT Portable or Forklift Containers	Licensee or Non-Licensee ASME 4001+ Gal. A.W.C.	Any Licensee Installation (DOT Container Filling and/or Service Station Only)
1. Red letters at least 2" high (or at least 1 1/4" high for storage racks for DOT portable or forklift cylinders) on white or aluminum background: NO SMOKING	*	*	*	*
2. Red letters at least 4" high on white or aluminum background: WARNING FLAMMABLE GAS			*	
3. Black letters at least 4" high: NO TRESPASSING AUTHORIZED PERSONNEL ONLY			*	
4. Letters at least 1/2" high: EXTINGUISH ALL PILOT LIGHTS AND OPEN FLAMES; VEHICLE MUST BE VACATED DURING FILLING PROCESS; TURN OFF ENGINE	*			*
5. Letters at least 2" high on each operating side of the dispenser: PROPANE	*			

Motor Mobile Fuel - GENERAL REQUIREMENTS

Container Design Pressure

Containers shall be designed, fabricated, tested, and marked (or stamped) in accordance with the regulations of the ASME Boiler and Pressure Vessel Code, Section VIII, "Rules for the Construction of Unfired Pressure Vessels

NFPA 58, §11.3.1.1

(A) ASME mobile containers shall be in accordance with one of the following:

- (1) A MAWP of 312 psig or higher where installed in enclosed spaces of vehicles
- (2) A MAWP of 312 psig or higher where installed on passenger vehicles
- (3) A MAWP of 250 psig or higher for containers where installed on the exterior of nonpassenger vehicles

(B) LP-Gas fuel containers used on passenger-carrying vehicles shall not exceed 200 gal aggregate WC.

(C) The capacity of individual LP-Gas containers on highway nonpassenger vehicles shall be 1000 gal (Maximum Container WC) or in accordance with U.S. Department of Transportation regulations

NFPA 58, §6.26.3.1

Name Plates

LP-Gas shall not be introduced into an ASME container unless it is equipped with an original nameplate or:

- (1) Commission identification nameplate
- (2) Duplicate nameplate (installed in a remote location)
- (3) Modification or alteration nameplate
- (4) Replacement nameplate

LP-Gas Safety Rules, §9.129(a)

Nameplates on stationary ASME containers built prior to September 1, 1984, shall include at least the following legible information:

- (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)

Nameplates on LP-Gas motor fuel tanks shall be permanently attached in a manner which will minimize corrosion of the nameplate or its fastening means and not contribute to corrosion of the container.

LP-Gas Safety Rules, §9.129(g)

After a container is permanently installed on a vehicle, container markings shall be readable either directly or with a portable lamp and mirror.

NFPA 58, §11.8.1.4

Sample Question 5

Hose shall be designed for a working pressure of _____ psig

- A. 100
- B. 250
- C. 312
- D. 350

Answer on last page

Overfill Prevention Devices

ASME containers fabricated after January 1, 1984, for use as engine fuel containers on vehicles shall be equipped or fitted with an overfilling prevention device.

NFPA 58, §11.4.1.15

Where an overfilling prevention device is installed on an ASME engine fuel container, venting of gas through the fixed maximum liquid level gauge during filling shall not be required.

NFPA 58, §11.4.1.17

Where the fixed maximum liquid level gauge is not used during filling in accordance with 11.4.1.17, the fixed maximum liquid level gauge or other approved means shall be used annually to verify the operation of the overfilling prevention device.

NFPA 58, §11.4.1.18

Container Installation (Non-Engine Fuel)

The LP-Gas supply system, including the containers, shall be installed either on the outside of the vehicle or in a recess or cabinet vapor tight to the inside of the vehicle but accessible from and vented to the outside.

NFPA 58, §6.26.3.3

Container Installation (Engine Fuel)

Containers shall be located to minimize the possibility of damage to the container and its fittings.

NFPA 58, §11.8.1

Where containers are located in the rear of the vehicle, they shall be protected.

NFPA 58, §11.8.1.2

Container valves, appurtenances, and connections shall be protected to prevent damage due to accidental contacts with stationary objects or from stones, mud, or ice and from damage due to an overturn or similar vehicular accident.

NFPA 58, §11.8.2.1

Protection shall be provided by:

- (1) Locating the container so that parts of the vehicle furnish the necessary protection
- (2) Use of a fitting guard furnished by the manufacturer of the container, or
- (3) Other means to provide equivalent protection.

NFPA 58, §11.8.2.2

Containers shall not be mounted directly on the roofs or ahead of the front axle or beyond the rear bumper of the vehicles.

NFPA 58, §11.8.3.1

Installation in the Interior of Vehicles

The container shall be installed in an enclosure that is securely mounted to the vehicle.

- (A) The enclosure shall be gastight with respect to driver or passenger compartments and to any space containing radio transmitters or other spark-producing equipment.
- (B) The enclosure shall be vented to the outside of the vehicle.

NFPA 58, §11.9.1.2

Fuel containers shall be installed so that no gas can be released inside of the passenger or luggage compartments by installing a remote filling device and a fixed maximum liquid level to the outside of the vehicle.

NFPA 58, §11.9.1.4

Valves

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

The pressure relief valve discharge from fuel containers on vehicles shall:

- (1) Be directed up or down within 45 degrees of vertical.
- (2) Not directly impinge on the fuel container, the exhaust system, or any other part of the vehicle.
- (3) Not be directed into the interior of the vehicle.

NFPA 58, §11.8.5.1

Label Requirements

All LP-Gas–fueled motor vehicles shall be identified by a weather-resistant **diamond-shaped** label affixed to its exterior vertical, or near vertical, lower right rear surface, but not attached to its bumper.
NFPA 58, §12.3.4

The label marking shall consist of a border and the word PROPANE in letters not less than 1 in. (25 mm) in height, centered in the diamond, of silver or white reflective luminous material on a black or Pantone 2945 C Royal Blue or equivalent background. (with changes per SR 9.403)
NFPA 58, §12.3.4.2, LP-Gas Safety Rules, §9.403

Sample Question 6

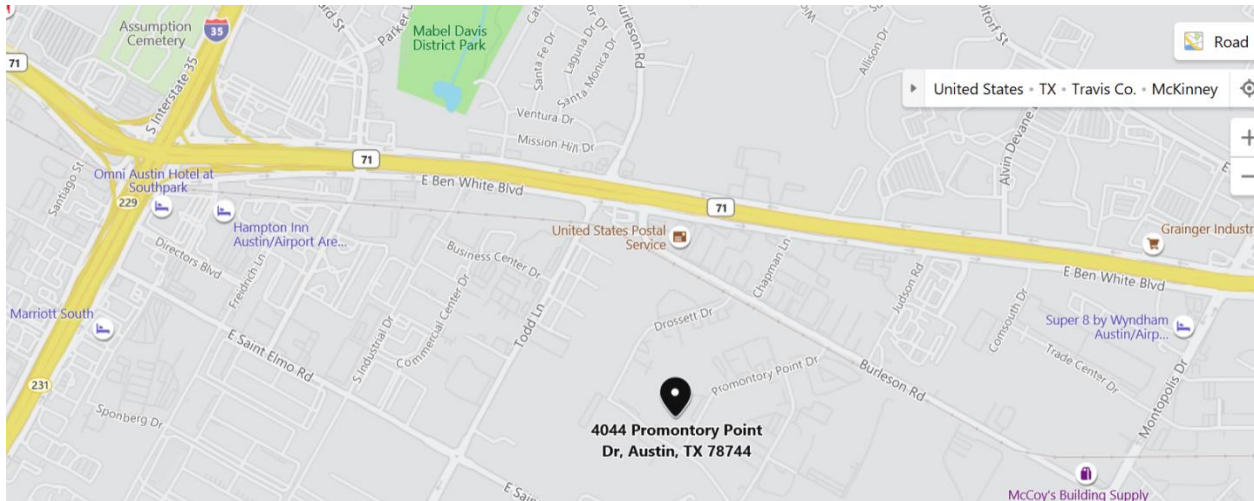
Engine fuel containers shall be located to minimize the possibility of _____ to the container and its fittings.

- A. damage
- B. theft
- C. tampering
- D. leakage

Answer on last Page

ALTERNATIVE FUELS TRAINING CENTER

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Sample Question Answers

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