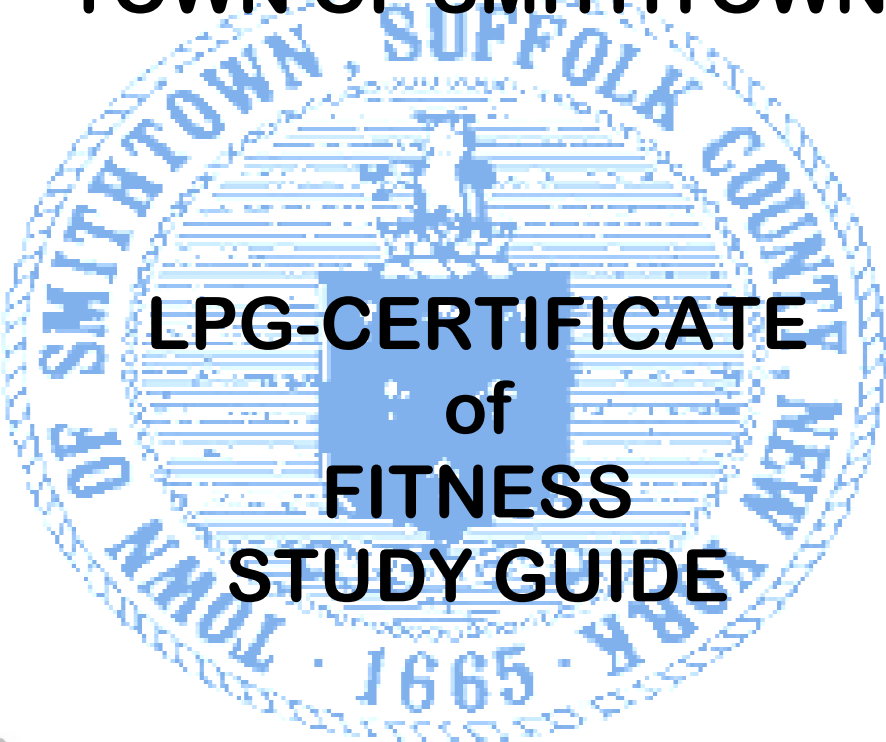




TOWN OF SMITHTOWN

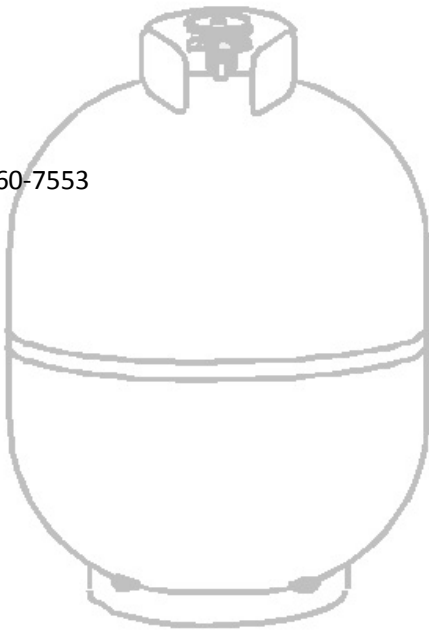


LPG-CERTIFICATE of FITNESS STUDY GUIDE

**DEPARTMENT OF PUBLIC SAFETY
FIRE PREVENTION DIVISION**

65 MAPLE AVENUE, SMITHTOWN, NEW YORK 11787 (631) 360-7553

**John Valentine, Department Director
Richard L. McKay, Chief Fire Marshal**



FORWARD

A Liquid Petroleum Gas (LPG) Certificate of Fitness is issued by the Fire Prevention Division of the Town of Smithtown Department of Public Safety. The Town of Smithtown requires that all persons filling containers where liquid petroleum gas is sold and/or transferred from one vessel into another shall hold a Certificate of Fitness (COF). A TYPE I-COF allows the holder to handle and transfer LPG at commercial dispensing stations. A TYPE I-COF does not allow the bearer to transport LPG or conduct domestic deliveries.

Information contained in this booklet is provided to assist applicants in preparation for written and practical examinations required to obtain a LPG-Certificate of Fitness. To receive the certificate, applicants must pass written and skills examinations. In addition to the information herein, the applicant must be familiar with the National Fire Protection Association Standards 54 and 58.

Applications for a COF may be obtained from the Fire Prevention Division, 65 Maple Avenue, Smithtown, New York 11787. Applications for a COF must be returned to the Division prior to making arrangements for the required examinations. Appointments for examinations will be made upon receipt of the application, the appropriate fee and two identification-type photographs. (Fee information may be obtained by calling 631-360-7553).

The written examination consists of objective-type questions that require multiple-choice and true-false type responses. A minimum score of 70% is required to pass this exam. The skills examination includes the following:

Fill procedures. An actual fill is NOT done during the test. The applicants will be required to fully explain each step, including:

- ❖ Operation of all related valves, shut-offs and connections.
- ❖ Leak and safety procedures.
- ❖ Operation of fire extinguisher.
- ❖ Use and test procedures of scale.

The applicant shall be prepared to answer questions about the properties and handling of LPG, emergency notification procedures and transportation requirements (commercial, as well as, in private customer vehicles).

Note: Nothing in the Town Code nor anything herein printed shall amount to a guarantee or warranty that any issuance of any permit, certificate, license or approval under Town Code nor the approval of any work under the Code shall constitute any guarantee or warranty whatsoever of any kind. Further any permit, certificate, license or approval issued authorizes a bearer to operate under the scope of said permit, certificate, license or approval within the Town of Smithtown but does not exclusively recommend the bearer.

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THE NATURE OF LPG

Safety in handling Liquid Petroleum Gas (LPG) requires a thorough knowledge of the product itself. LPG is an unusual fuel, unlike any other that is in common use. It would be hard to find a product that is used as much by the general public but is so little known. The average customer knows that it burns as a gas and presumably that it is a liquid in the tank; beyond this, he knows little about a fuel that he is using every day of the year. This fact makes it incumbent upon the LPG marketers and their employees to know as much as they can about LPG in order that the chances for error or poor judgement on the part of the consumer will be minimized, if not entirely eliminated.

The principal advantage of LPG is the fact that it can be stored as a liquid and used as a gas. But this is also a characteristic that can cause the most trouble if the material is not properly handled.

The basic point to remember is this: LPG is inherently safe. It is usually in its misuse or careless handling that safety problems arise. Actually, the only real hazard occurs when LPG escapes under dangerous conditions. This is almost always due to ignorance, carelessness, or an error in judgement. Good maintenance and inspection reduce the already rare occurrences of mechanical failure.

The techniques of handling LPG are covered in various codes and ordinances. The design, materials and methods of fabrication of equipment to handle it are also prescribed by code. Since LPG is under almost all conditions stored under pressure, the container that holds it must conform to the applicable code. When in storage, the product is just as safe as good engineering practice can make it.

What distinguishes LPG from other members of the family of petroleum hydrocarbons is simply its boiling (or vaporization) point. It boils or liquefies, without pressure at temperatures that are fairly easily attainable. This is not true of any of the other hydrocarbons. Gasoline, kerosene, diesel oil and other similar hydrocarbons are normally liquids at atmospheric pressure and temperature. To make them boil and vaporize requires the application of considerable heat. On the other hand, natural gas, which is primarily methane, remains a gas under these same conditions. To delete it, without pressure, requires an extreme reduction of temperature. This difference between LPG and other hydrocarbons is the key to understanding its behavior.

Liquid petroleum gases are produced or manufactured in one of two ways. In one method the LPG originates as an ingredient in "wet" natural gas. The hydrocarbons which are present in some natural gas when it is brought up from the earth may be the LP gases; by stripping the propane and butane from the natural gas in an absorption plant, producers obtain marketable LPG.

Another source of LPG is the refinery. Here they are produced as a by-product of the refining process. Regardless of source, however, the products are the same - although the mixtures in which they are marketed may not be.

The two principal LP gases are propane (C₃H₈) and butane (C₄H₁₀). Traces of other hydrocarbons may be found in the product. Any number of blends or mixtures of propane or butane may be made.

However, even though any combination may be present in a given gallon of LPG, today that LPG which is most widely used in the retail market is generally at least 90% propane. Therefore, our description of the product will be limited to propane unless otherwise indicated.

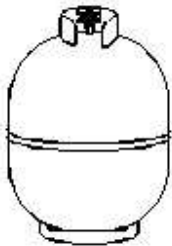
Although we have said that propane boils -- or liquefies -- at a rather easily attainable temperature, obviously we were speaking only in relative terms. A temperature of -44°F is not a level that could be achieved with ordinary chilling methods. The cooling must be accompanied by pressurizing; a combination of the two is generally used to liquefy it.

With the temperature outside at 60°F or 70°F, much of the propane within a tank will still remain in liquid form. The internal vapor pressure will be about 100 psi. When the LPG is removed from the tank to a burner, there will be a very slight drop in pressure and if the outside or ambient temperature is well above the liquification point some liquid will vaporize or gasify.

INSIDE THE TANK: PROPERTIES OF LPG

UNDER PRESSURE

Let's look inside the tank. LP gasses are stored under pressure. The total vapor pressure exerted by mixtures of LPG at a given temperature depends upon the percentages and vapor pressures of the individual gases. At 100°F the pressure of butane would be 37 psi and propane about 172 psi. Because most commercial mixtures of LPG include high vapor pressure gasses, they consequently exert pressures significantly higher than 172 psi.



In view of this, it is obvious that LPG must be contained within a tank built to withstand relatively high pressures. These tanks are built to rigid specifications under codes developed by the ASME (American Society of Mechanical Engineers) or the ICC. Propane tanks have working pressures of 200 or 250 psi and are tested by the manufacturer to insure their safety.

Because of the fact that the liquid expands as the temperature increases, it is imperative that a container never be completely filled. A vapor space or "outage" must be left above the liquid sufficient in volume to permit room for expansion under any temperature conditions that weather might create.

ROOM FOR EXPANSION

It should be obvious that the volume that can be placed in a container is dependent upon the temperature of the liquid at the time of filling. If the liquid is cold at the time the filling is done, it would be in a contracted state. But as the temperature increases, it would undergo considerable expansion. Thus a container should be filled less full when the temperature of the liquid is low than at noon, when it is at its peak. In the latter case, the gas will already be in an expanded state, so as the temperature drops it will tend to contract rather than expand.

It should be borne in mind that the real volume of propane at 60°F that is placed in the container will not be any different in either case; the only difference is that in one case it is in an expanded state and in the other it is in a contracted state.

To better visualize the magnitude of this expansion of propane, consider that 1 gal. at 60°F will expand to 1.07 gal. at 100° or contract to 0.92 gal. at 0°F.

This volumetric variation makes it necessary that safe-filling densities be used as a guide to the filling operation under varying conditions of temperature. Tables containing such filling densities have been developed, and may be found in various published works. One such table appears in the National Fire Protection Association's No. 58 (sec. B12).

This liquid expansion and vapor pressure characteristic could become serious if the tank were to be exposed to unusually high temperatures -- for example, such as in a fire. Even a strongly built propane container might rupture under these conditions.

When the product tries to "outgrow" the tank, problems are prevented because containers are equipped with safety relief valves. Such valves are set to open to atmosphere when the pressure exceeds a set figure. When a safety relief valve operates, it allows gas to escape. This bleeds off some of the gas, reducing the pressure in the vessel and permitting the relief valve to close of its own accord. Sometimes a quick release is all that is needed to rectify a problem.

LIQUID TO VAPOR

One gallon of liquid propane will vaporize to fill a 270 gallon container at the same temperature. In other words, the material has a liquid to vapor expansion ratio of 1 to 270. This explains why leaks are so dangerous. As the material escapes the container and vaporizes, it will quickly cover a large area. If it reaches an ignition source it may result in either an intense fire, violent explosion or both.

HEAVIER THAN AIR

Simply stated, propane gas is 1½ times heavier than air. When propane vapors escape, they tend to settle in low places. Unlike natural gas, it is heavier than air, having a specific gravity relative to air of 1.5. For this reason, bulk plants are never built down in hollows; should there be a leak it would be difficult for the vapors to be dispersed. Also (as we shall see later on), with certain well-defined and limited exceptions, LP-gas containers must be kept out of doors and away from places where escaping gas might be trapped. For example, a cylinder, while it may be located close to a dwelling, must be kept a certain distance from basement windows so the gas will not drift through the window and into such a natural trap. Certain cylinder filling operations must be undertaken in buildings and charging plants; however, these rooms should be well ventilated. All distances shall be in accordance with the current edition of NFPA 58.

FLAMMABLE

Because LP-gas is flammable, losses to the atmosphere should be held to an absolute minimum. A small amount of fuel escapes every time a filling connection is separated. Therefore, during loading or unloading operations, it is inevitable that a small amount of LP-gas will be discharged into the atmosphere at various times. If this discharge is held to a minimum it will disperse rather rapidly and the amount in the atmosphere will be kept below the lower limits of flammability.

It is important to know that the flammable limits of propane in air is given as a percentage of gas in air-gas mixtures. The lower limit is 2.1% and the upper flammable limit is 9.5%. These are relatively narrow limits of flammability, a fact that enhances the inherent safety in the product. Either above or below these limits, the mixture will not burn.

Because of the hazards of sudden discharge of LP-gas, containers are equipped with excess flow check valves which close automatically in cases of a clean break or a rupture in a pipe or hose downstream of the container. A rupture will cause a sudden increase in flow through the valve and cause it to close. It will not reopen until pressures are once again equalized.

AN ODORLESS GAS

LP-gas, like natural gas, is odorless. In order that its presence may be detected, an odorant is added at or near the source of supply. This is a basic requirement (although for use in certain manufacturing processes the gas will not be odorized).

The amount of odorant added to LP-gas is set by codes. Only certain types of approved odorants may be used. No gas should be accepted for use in the retail market unless it is adequately odorized. All gas in the retail market will be received and dispensed odorized.

REVIEW OF PROPERTIES

This, in brief, is the nature of LP-gas: it is a petroleum hydrocarbon which is a liquid when stored under moderate pressures and a gas when released at normal ambient temperatures. It is inherently safe, and is generally only dangerous if it is escaping. Its vapor pressure increases rapidly as the temperature increases. When the gas is released to atmosphere at ordinary temperatures, it expands rapidly. It is heavier than air and care needs to be taken not to allow leaks where significant amounts of gas is going to accumulate. Within the flammable limits of LP-gases, a single spark can easily ignite the product. Because it is odorless, approved odorants must be added. Finally, LP-gases are considered non-toxic. However, in confined spaces LP-gases can displace oxygen. Due to decreased levels of oxygen, this condition can cause unconsciousness or death.

REVIEW OF PROPERTIES **LPG approximate properties**

VAPOR PRESSURE IN PSIG @:

70°F=132
100°F=205
130°F=300

LIQUID SPECIFIC GRAVITY @:

60°F=0.509

BOILING POINT @:

ATMOS. PRESSURE=51°F

LIQUID LPG WEIGHT PER GAL. @:

60°F=4.24 lbs.

CUBIC FOOT OF VAPOR PER GAL. @:

60°F=8.58

VAPOR DENSITY @:

60°F=1.52

FLAMMABLE LIMITS IN AIR:

Lower limit: 2.1%
Upper limit: 9.5%

EXTINGUISHER REQUIREMENTS

NFPA No. 58 at paragraph 2.14, outlines the requirements for portable fire extinguishers within the plant: "Each bulk plant shall be provided with at least one approved portable fire extinguisher, having a minimum rating of 18-B.C. Ratings shall be in accordance with the standard for installation,

maintenance, and use of portable fire extinguisher, in NFPA No. 10" (Additional requirements are made for industrial installation involving containers of 150.000 gal. aggregate water capacity or more, but this requirement is beyond the scope of this article.

Paragraph 3.12 lists the requirements for the tank truck or tractor, as follows: "Each tank truck or tractor shall be provided with at least one approved portable fire extinguisher having at least a 18-B, C rating, or when more than one is provided, each extinguisher shall have at least a 6-B.C. rating ...ratings shall be in accordance with the standard for installation, maintenance, and use of portable fire extinguishers, NFPA NO. 10".



SAFETY & DELIVERIES

When you start out transferring fuel into customers tanks, you are assuming a big responsibility. Negligence and inattention to duty could result in accidents which could prove to be extremely costly to your company.

You will be dealing with a fuel that is inherently safe as long as it is in a safe container and properly handled when transferred one cylinder to another. You will be transferring it through safe equipment into receptacles that are built for safety and equipped for safe operation. But safe equipment is no absolute safeguard against gross negligence. The equipment must be used as it was intended to be used.

Safe operation of equipment is a product of good habits. You should start immediately, the first day on your job to develop good habits. Make them a part of you. Take no short cuts -- even if the procedures you are omitting seem onerous or unnecessary. All recommended procedures have a sound justification.

START YOUR DAY RIGHT

Before making any fuel transfers for the day, you should inspect all equipment thoroughly. The following points of inspection are recommended:

Check all containers including cylinders, pumps, piping, fittings, and valves for leaks, external damage, loosening of connections and improper functioning. Make sure cylinders are fixed securely in an upright position.

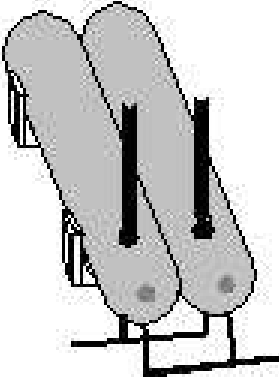
Check for cleanliness. All related equipment should be kept clean and the area of operation should be kept free of excess debris.

Make sure emergency equipment you should have is in place. This would include fire extinguishers.

Before starting, report to your supervisor any physical defects of equipment noted during the inspection or operation. Then see that the defects are corrected before operations commence or continue.

While operating around a fill location, keep alert and use your common sense.

BULK FILLING



When transferring LPG from a supply tank to a customer's container, observe the following:

Never smoke in the vicinity of filling operations.

Never load or unload in the vicinity of open flames or sparks from bonfires and welding or cutting operations.

Always remain close to the transfer connection during the entire loading and unloading operation.

Before making any connections, make sure filling is done on level ground.

Take care with hoses. Protect them against damage at all times. Never drag hose connection or valves over the ground. When the hose is not in use, carefully coil it in a rack or on a reel.

Before and during filling operations check the capacity of the container to avoid filling it in excess of the maximum permitted filling density.

Put into a container only the fuel that it is designed to receive.

During filling operations, always be on the alert for evidence of leakage. When a leak is detected, stop filling operations at once. Stop the motor used to operate the pump. Close off the main valve.

Check for the leak with a leak detecting solution. Never start the motor again until the leak has been stopped and any dangerous concentration of gas has been dispersed. Then you may resume filling operation.

Make sure that filling connections, when not in use, are properly capped.

Never leave the area when you are transferring LP-gas into a container. Many regulations specify that at least one attendant familiar with the transfer operation must remain in attendance at the controls necessary to stop the transfer operation.

Who would qualify as "an attendant familiar with the transfer operation"? This might vary from one jurisdiction to another. One code specifies that a person qualifies as such after he has been provided with a set of instructions for the unloading operation, and has performed it through at least three full cycles under supervision.

When filling a tank always make sure you put the right fuel into the right container. Butane, a lower vapor pressure product may be safely put into a "propane tank".

Look carefully at the date plate to be sure that the container is satisfactory for LP-gas service and that the vapor pressure of your product is suitable.

Never fill a "non-code" tank. That is, never fill a tank that is not built according to acceptable specifications and so labeled.

CONNECTIONS

In order to insure that the hose end connections are tightened sufficiently, it is strongly recommended that spanners be used to tighten the acme threads. If other types of connections are utilized they should be tightened or secured in a manner that was intended by the manufacturer.

After the hoses are connected and before the transfer operation is undertaken, pressurize the hoses or pipelines by opening the proper valves so that a pressure test of the system can be obtained. If any leaks appear, isolate the transfer section and tighten the connections (or remake them) until the system is gas-tight.

FUEL FLOW

After being sure that the connections are properly made, the operator should then open the line valves or follow whatever procedure is appropriate to start the pump or compressor, making sure that fuel is flowing properly so the equipment will not be damaged by starvation, overheating or over pressuring.

DISCONNECTING

After the transfer is completed the responsible individual should shut off the pump or compressor, close all liquid and vapor valves progressing from the tank to the pump and, finally, disconnect the hoses. Before disconnecting the hose, make a quick check to see that the supply tank valves and transfer line valves are closed. Keep valves, nozzles and connections free of dirt, water or other foreign matter. If the liquid hose is to be emptied at the close of the transfer, open the bleed or vent valve so that the product may blow down through the riser provided for such discharge.

Do not leave a liquid filled hose in the sunlight. An increase in pressure may cause the safety relief valve to operate and, in addition, the sun and weather may have a detrimental effect upon the material used in the hose cover. It is recommended that some sort of shelter be provided. A tube slightly longer than the hose, or a cover of some type, will extend the life span of the hose.

STOP ENGINE

If the unloading operation is accomplished by the use of a pump or compressor attached to a transport vehicle, it is extremely important that the engine in the truck or tractor be stopped and shut down during the time the connections are being made. If there is a noticeable discharge of gas during the connecting operation, or if leaks develop that can subsequently be eliminated, sufficient time should be allowed for dispersion of the gas before starting the engine.

As soon as the transport tank is emptied, disengage the pump or compressor and stop the engine before disconnecting any hoses. Again, after the hoses are disconnected, allow sufficient time for the dispersal of vapor that may have escaped before the engine is started again. It is the driver's responsibility to pick up and store the chock blocks and to see that the hoses are disconnected and that everything is clear and in order before moving the equipment. There is no substitute for a complete round trip of equipment in order to assure safety.

SIMILAR SEQUENCE

Loading bulk trucks follows much the same sequence as unloading transports. The truck is first driven to a position at the loading rack and the engine stopped. The driver should be responsible for chocking his wheels. The designated employee-plant manager, loader or driver, depending upon the size or organization of the plant should see that the fire extinguisher is available and should properly connect the hoses. The pump has a known capacity and the man doing the filling knows, or should know about how much fuel it will require to fill the tank to the proper level. As in unloading a transport, someone should be in attendance all the time the bulk truck is being filled.

WATCH FOR LEAKS

The tank gauge should be consulted occasionally to check up on the progress of the filling. Several minutes before the tank is filled to the proper level a fixed liquid level gauge or rotary gauge should be set to the permissible filling level and should have bleeder valve open so that the man handling the operation can determine when the liquid reaches the maximum safe level.

After the filling operation has been completed close the valves progressively from the filling line to the bulk truck tank and disconnect the hose from the filler connection. Allow the entrapped gas to escape by slightly loosening the connection and waiting for the pressure to reduce to zero, or by venting the gas through a bleed valve and vent provided for such purpose. If gas should continue to escape, it indicates a leaking or open valve and this condition should be corrected immediately. Allow ample time for the escaping gas to disperse before starting the engine. The driver may then pick up the chock blocks and walk all around the truck to see that everything is disconnected and that it is safe to move the vehicle.

IS IT THE PROPER TANK?

Make sure you fill only the correct tank. Check the nameplate to make sure the tank is the proper type approved for LPG.

After you have checked to make sure the tank is the right one for the service, make sure that the container valves, fittings, and gauges, are in satisfactory condition.

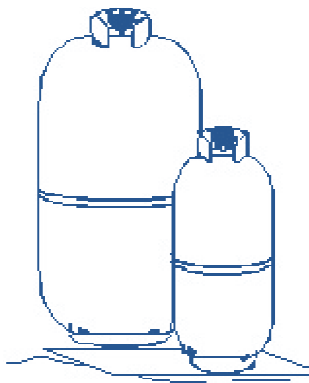
The principal hazard in connection with cylinder usage is that these containers are generally considered so safe that individuals are likely to become careless with them. It is true the cylinders are designed for

safety; however, they will remain safe only so long as they are maintained, filled and transported with full observance of the necessary precautions.

A cylinder that is properly protected from corrosion, mishandling, and neglect will have a long life-span. An indication of this fact is that the Interstate Commerce Commission regulations will permit the use of a new cylinder for 12 years after the date of manufacture without retest or re-qualification. Then, another five to seven years may elapse depending upon the type of test made, before the second test will be called for.

The national requirements on testing and retesting are administered by the Interstate Commerce Commission. There are three possible methods to use: the external visual inspection, the modified hydrostatic retest, and the hydrostatic retest with expansion.

As explained above, the requirements can be met by the performance of one of these tests at the end of the first 12 years of service. If the external visual method is used, subsequent tests must be made every five years. On the other hand, if the modified hydrostatic test is used, subsequent retests need be made



every seven years, and if the hydrostatic test by water jacket method is used subsequent retests come due in 12 years. The visual inspection method has long been recognized by the LP-gas industry as an effective means of requalification and is widely used.

"Recommended Procedures for Visual Inspection and Requalification of ICC Cylinders in LP-gas Service" has just been completed by the NLPGA's T&S committee. These procedures contain pertinent data relating specifically to LP-gas cylinders from the Compressed Gas Association's "Standard for Visual Inspection of Compressed Gas Cylinders". (CGA Pamphlet C-6-1962), recognized industry practices, and ICC requirements to provide the necessary information to requalify LP-gas cylinders by the visual.

CYLINDER FILLING

ICC regulations and NFPA 58 indicate the acceptable methods of determining that cylinders are properly filled. You should make sure that the procedure you are following is in accordance with local codes.

We do not intend to go into the details or consider the merits of volume or weight filling. If appropriate equipment is available and proper procedures are followed in every instance there is no doubt that either method of controlling the liquid contents of a cylinder can be perfectly satisfactory. The important point to remember is that a cylinder must not be overfilled. In order to prevent such a situation from arising, you must have proper equipment, properly maintained and used by individuals who are trained and will conscientiously follow prescribed procedures.

Automatic controls on cylinder filling manifolds are one of the most valuable safety devices developed in the LP-gas industry. To be effective, they must include quick-closing valves. When kept in proper adjustment, they are very effective in insuring the proper filling of any cylinder.

Users of hand-operated rotating stem valves in filling plants might consider the advisability of installing quick-closing valves on the manifold hoses. They can save time and fuel and prevent overfills. It requires as much time to bleed an overfilled cylinder as it does to fill the cylinder in the first place, not to mention the waste of fuel and the creation of a fire hazard on the premises.

As a precaution against the accumulation of vapors in the filling area, it is suggested that a "blow down pipe" be installed. If it is necessary to bleed off a cylinder, the vapor can be discharged through a vent stack at a reasonable distance above any building in the yard.

Cylinder valves should be protected at all times because the valve is the most easily damaged part of the cylinder. Welded-on rings extending higher than the valves protect the valve from the lateral blows. The danger from vertical blows is, in the ordinary handling of a cylinder, rather remote. If the cylinders are of the conventional type with a screwed cap to protect the valve from every direction, the cap should be screwed on immediately after disconnection from the customer installation.

FILLING SCALES

At every location where LP-gas is filled, there should be a certified scale. Every scale for cylinder filling and test weights and should be checked periodically for accuracy by a weights and measure official or a scale manufacturer's representative. In addition, every scale should be checked daily with test weights in the following manner:

- ❖ Zero the scale without any weight on it.
- ❖ Add one 50 pound test weight and check the scale. Add a second test weight and check the scale. Add a third...add a fourth, etc. If the scale checks out correctly with each 50 pound increment, the scale is satisfactory for use. For smaller containers use proportionally lighter weights.
- ❖ If the scale does not check out properly at each weight and cannot be adjusted, discontinue use and advise your supervisor.
- ❖ Clean scale pits regularly, and keep water out of them. It is imperative that the scales be kept in correct operating condition at all times to safely fill cylinders.

CHECKING CYLINDERS

Cylinder markings. make sure the cylinder is approved for LP-gas with authorized DOT(CC) cylinder markings.

Visually inspect the cylinder. Cylinders to be filled must be checked for dents, gouges, leaks, rust or other defects and if physically sound, may be filled. Ice and other foreign matter must be removed from cylinders before filling. In addition, if a cylinder is over 12 years old, it must be requalified or discarded. If it has been previously requalified, it must be requalified every five (5) years. Visual requalification is indicated by the date of requalification followed by the letter "E". Cylinders with obvious damage or excessive rust may not be filled, as well.

Filling by weight. Do not fill a cylinder unless it has the water or propane capacity and the tare weight marked on the container, or has an outage gauge. Cylinders may be filled to 42 percent of the water capacity in pounds.

Filling with fixed level gauge. DOT permits filling cylinders by outage gauge on containers exceeding 200 lbs. water capacity. A representative cylinder of the days filling at each charging plant should be checked by weighing. Do this with the charging hose disconnected.

Valve protection. Valves on full containers must be protected with permanent collars or screw type protective caps and must be in serviceable condition. Install protective caps immediately after filling.

Foot rings. Cylinder foot rings should be in serviceable condition. Examine bottom of the tank for excessive rust.

Ownership of cylinders. Cylinders may only be filled with the owner's permission.

INSPECTION OF VALVES

Inspect safety relief valve. Inspect for damage, corrosion, etc. and replace if necessary. Foreign matter (dirt, insects, webs, etc.) should be removed.

Inspect valve outlet. Be sure the outlet threads are clean and undamaged.

Inspect valve for approval. Replace the valve if it is not UL listed.



FILLING CYLINDERS

- ❖ Check tare weight.
- ❖ Connect the fill hose adapter to the cylinder, and set the tare beam on scale to proper weight. Compensate for the weight of the filling connector and hose.
- ❖ Open cylinder valve, then open fill hose valve.
- ❖ Check all container fittings for leaks with leak detector solution. Replace or repair any valve that leaks.
- ❖ When the cylinder is filled to the proper level immediately shut off fill hose valve, and close cylinder valve.
- ❖ Check the valve outlet for leaks. Seams and welds shall also be checked either with soap solution or by immersion.
- ❖ After filling the cylinder and disconnecting the hose, be sure the cylinder contains the proper amount of gas. Verify by checking the filled weight on the scale.

TRANSPORTING CYLINDERS

- ❖ Prior to transporting, valve protecting cap, plug, or collar must be in place.
- ❖ All cylinders shipped by common or contract carrier must have a DOT red shipping label.
- ❖ Transport in private vehicles should never be in the trunk of a car.
- ❖ The customer should know to transport the cylinder direct to the destination without stops or side trips.

KNOW YOUR CYLINDER

In filling and servicing LP-gas cylinders, you must know the specific valves and be able to recognize immediately whether the valves and connections are intended to communicate with the vapor space or the liquid space. Years ago, practically all cylinders were intended for vapor withdrawal service. There are thousands of cylinders that may be fitted for liquid withdrawal only, or may be fitted for either vapor or liquid withdrawal. Cylinders shall be filled and used for its specific application only.

Special connections differing from the standard POL maybe utilized for liquid service. Don't depend upon this distinction in deciding which type of service a cylinder is intended for, because there are cylinders that are fitted with what appear to be conventional POL cylinder valves that do communicate directly with the liquid space.

The importance of being sure that cylinders fitted for liquid withdrawal do not become involved in installations intended for vapor service cannot be over stressed. If there is ever the slightest doubt, get the correct answer at the filling plant before placing the cylinder on a delivery truck.

Occasions may arise when repairs or modifications of cylinders are necessary or desirable. It is always important to keep in mind NFPA 58, Paragraph B.4 (b): "Where repair or modification involving welding of ICC containers is required, the container shall be returned to a qualified manufacturer making containers of the same type, and the repair or modification made in compliance with ICC regulations.

MAINTENANCE OF CYLINDERS

RUST

Regarding cylinder maintenance in general, the greatest enemy of cylinders is rust. It is most likely to occur at the bottom and inside the base ring. For this reason, and for the sake of appearance, the entire cylinder should be kept properly painted. Cylinders are required to be painted in a white, silver or other

light reflective color. Care should be taken by the owner and filler alike to prevent scratching off any paint and coating which protects a cylinder from rust.

VALVE MAINTENANCE/REPAIR

The valve or valves are the one part of the cylinder that is subject to wear because of movement through use. The repeated opening and closing of the shutoff device through years of use can induce wear in the valve seat and stem. Similarly, the repeated making and breaking of the valve outlet can produce wear. The materials utilized in the manufacture of valves have been selected because of their strength and suitability for the intended service. They will not, however, withstand repeated abuse, so care should be taken in making up the outlet connection. Always engage threads at least two turns by hand before using a wrench. Make sure the two elements are in proper alignment before completing the connection.

Although it is not recommended that cylinder valve repairs be made while the valve is in the cylinder, it is possible to make minor repairs such as reseating the POL connection or chasing the POL threads in the event of an emergency. This is suggested only in the event a cylinder cannot be unloaded without leakage from the cylinder valve connection.

The cylinder valve now in common usage includes a safety relief device which should be of suitable capacity and set to discharge in accordance with ICC regulations. The conventional setting pressure is 375 psi. While these safety relief devices are seldom called upon to operate, it is important that they be kept in good condition. Each time the cylinder is filled the safety relief device should be observed to see that it is free and clear of any foreign matter, that the spring appears to be free of rust and corrosion, and that the cap or body is not distorted or in any way damaged preventing normal operation of the valve.

A program of periodically retesting safety relief devices with the cylinder valve removed from the cylinder may be undertaken if adequate facilities and trained personnel are available. Another alternative may be an exchange program in which cylinder valves are removed after a reasonable period of service and returned to a valve manufacturer to be replaced with either new or reconditioned valves.

The importance of maintaining a satisfactory operating safety relief device cannot be overstressed. If failure should occur, premature operation of the valve may create a hazard by discharging vapors; or, in the event that the valve fails to open, the cylinder might fail due to over pressure. Each time a cylinder is filled it should be determined that it is leak free. Pay particular attention to the cylinder valve, being sure it will close off gas tight, and that there is no leakage in the area of the stem. Bear in mind that most cylinder valves have a back-seating arrangement. Even if the primary seal in the valve has failed when the valve is in a full open position, it may not necessarily leak at the stem. Therefore, it is recommended that the area of the stem be observed while the valve is being closed.

DO-IT-YOURSELF RECONDITIONING

Cylinder valves can be reconditioned provided adequate facilities and trained personnel are available. As an alternative, an exchange program with a valve manufacturer will insure a safe, satisfactory, and economical supply of replacement units.

The removal of cylinder valves from the container can be a rather awkward and costly procedure unless proper facilities are available. Every filling plant should have a cylinder vise securely anchored to the floor. A proper solid-jaw wrench for removing and replacing each type of valve should be at hand. With the cylinder securely held in the vise, you can remove the valve with a long-handled wrench without having to hammer either the valve or the cylinder. The torque load or pressure applied to the wrench handle should be the only force used for removing valves.

CODE OF THE TOWN OF SMITHTOWN CHAPTER 164 – FIRE PREVENTION [LOCAL LAW 4-1990], ARTICLE XV, Liquefied Petroleum Gases

NOTE: This is an unofficial compilation of sections of the Code of the Town of Smithtown regarding the use, storage, handling and transportation of Liquid Petroleum Gas. It is provided here for the convenience of persons preparing for examination(s) for a Certificate of Fitness. Official copies of Town Code may be obtained through the Smithtown Library or the Town Clerk's office.

§ 164-103. Applicability.

The provisions of this article shall apply to all uses of liquefied petroleum gas and the installation of all apparatus, piping and equipment pertinent to systems for such uses.

§ 164-104. Filing of plans and reports.

A. Plans.

- (1) The plans for all new fixed LPG installations must be submitted to the Fire Prevention Division for approval prior to installation. The plan shall be a site plan showing locations of buildings and property lines and all pertinent dimensions, including the proposed locations of containers, vaporizers and equipment with the capacities and descriptions thereof, submitted in duplicate. The acceptance of plans for installation does not relieve the applicant from meeting the requirements of any other law, rule, ordinance or regulation of any other authority having jurisdiction. [Amended 3-14-2000 by L.L. No. 4-2000; 1-11-2005 by L.L. No. 1-2005]
- (2) The installation of containers or tanks shall require the issuance of a permit from the Department of Public Safety. [Amended 3-14-2000 by L.L. No. 4-2000; 1-11-2005 by L.L. No. 1-2005]
- (3) All underground LPG tanks and piping are to remain uncovered until the installation is inspected and approved by a Fire Marshal.
- (4) No LPG system which requires a permit to install shall be utilized until an inspection of the same has been made by a Fire Marshal and an appropriate certificate of compliance has been issued.

B. Temporary heat location reports. Every installation of LPG used for temporary heat must be reported to the Fire Prevention Division at the time of installation. [Amended 3-14-2000 by L.L. No. 4-2000]

§ 164-105. Installation and maintenance of equipment.

A. All equipment shall be installed and maintained in conformity with the rules and regulations of this chapter and the appropriate standards of the NFPA. It shall be unlawful to install, service, handle or offer for sale, in any form, liquefied petroleum gas and related equipment that does not conform to these rules, regulations and standards.

B. No person, firm or corporation, except the owner or those authorized by the owner to do so, shall sell, fill, refill, deliver or permit to be delivered or used in any manner any LPG container for any gas or compound or for any purpose whatsoever. Only containers designed for LPG may be filled with liquefied petroleum gas. Filling LPG containers with any other gas or compound is prohibited.

C. Cylinders used for LPG shall be painted white, silver or other light-reflecting color as approved by the Fire Prevention Division. It shall be unlawful for any supplier to refill any container that has been painted any other color. [Amended 3-14-2000 by L.L. No. 4-2000]

D. The gas supplier shall refuse to fill any container that does not fully conform to all provisions of this chapter or one that has been involved in a fire, burned or scorched.

E. The replacement of parts on containers, regulators or related equipment shall be made by qualified personnel only.

F. The peening of weld leaks is prohibited.

G. Tanks, cylinders or other storage vessels which previously contained gases other than liquefied petroleum gas, such as but not limited to Freon, acetylene or hydrogen, shall not be revalved and used for liquefied petroleum gases.

§ 164-106. Portable cylinders.

A. Portable vapor-withdrawal cylinders with water capacities greater than 2½ pounds, which are or will be owned by the user or intended user, are not to be filled or refilled unless the cylinder has been properly tested or requalified in accordance with United States Department of Transportation regulations and has attached thereto a warning label approved by the Fire Prevention Division. A cylinder(s) shall not be released to the owner or his representative by the seller or refiller until it has been determined that the cylinder has not been filled beyond acceptable limits (42% of its water-weight capacity), is free of leaks and is safe for use or continued use.

B. Containers, except those used in liquid-withdrawal service up to and including 40 pounds' propane capacity, shall be checked for leaks immediately after filling. The test will be done by qualified personnel by checking each connection with a soap-water solution or by total submersion in a water-filled container. Should a leak exist, the container shall be emptied immediately and marked with paint,

indelible ink or marker or other suitable means to positively identify a container that leaks. A leaking container shall not be transported from the filling site while it contains any product, either in liquefied or vapor form.

C. All portable Department of Transportation and Interstate Commerce Commission containers shall have the date of manufacture permanently stamped on a permanently attached collar or on the cylinder if the collar is not permanently attached and, in the case of containers more than 12 years old, shall have the date of the most recent inspection, month/year, marked on the collar or cylinder.

D. Every person, firm or corporation offering the filling of LPG cylinders for sale or resale shall have a certified scale on the premises to ensure that each portable cylinder containing LPG has not been filled beyond its safe capacity. Each such cylinder shall be weighed before delivery to the purchaser to ensure that the cylinder is not filled beyond acceptable limits.

E. Container storage restricted.

(1) No container of LPG, either in use or in storage, shall be permitted inside or on the roof or balcony of any occupied building or in or on any construction attached to an occupied building, except as permitted in Subsections F and G below.

(2) Industrial lift trucks shall comply with the provisions of the appropriate standards of the NFPA.

(3) The storage of containers must be outside the building, at least 25 feet from any building or structure. Storage is to be in either a noncombustible top- and bottom-vented structure or surrounded by a substantial metal fence enclosure. Such enclosure is to be adequately secured against access by unauthorized persons.

F. Department of Transportation specification cylinders with a maximum water capacity of 21/2 pounds, used with completely self-contained hand torches and similar applications, may be stored or displayed in a building frequented by the public, the quantity of which shall not exceed 200 pounds aggregate.

G. The temporary or emergency use of LPG equipment in occupied or unoccupied buildings shall be approved by the Fire Prevention Division prior to use. Any tank used inside any building shall be equipped with an excess-flow valve to shut off the flow of gas if a hose or other connector is severed. [Amended 3-14-2000 by L.L. No. 4-2000]

§ 164-107. Permits required. [Amended 3-14-2000 by L.L. No. 4-2000]

A. Permits shall be required in locations where propane is installed, stored, sold, stored for rental or resale and/or transferred from one vessel to another. Liquefied petroleum gas (LPG) permits shall be acquired from the Fire Prevention Division.

B. Application for permits shall be made to the Fire Prevention Division on forms provided and shall include the applicant's answers in full to inquiries set forth on such forms. Applications for permits shall be accompanied by such data as may be required by the Division and such fees as may be required by the town.

C. The Fire Prevention Division shall review all applications submitted and determine compliance with applicable provisions of the Code. If an application for a permit is rejected by the Fire Prevention Division, the applicant shall be advised of the reasons for such rejection.

D. A copy of permits shall be posted or otherwise readily accessible at each place of operation or carried by the permit holder, as specified by the Fire Prevention Division.

E. Permits shall be valid for a period of one year.

§ 164-108. Transportation.

A. No person, firm or corporation whose motor vehicle, tank truck, tank truck semitrailer or tank truck trailer, which is based within the Town of Smithtown, shall use or cause to be used any motor vehicle, tank truck, tank truck semitrailer or tank truck trailer for the transportation of liquefied petroleum gas unless, after complying with these regulations, a permit to operate any such vehicle has first been secured from the Fire Prevention Division. No permit shall be required under this section for any motor vehicle that is used for the transportation of LPG in containers not larger than 10 gallons' water capacity each (approximately 34 pounds' propane capacity) with an aggregate water capacity of 25 gallons (approximately 87 pounds) or when used in permanently installed containers on the vehicle as motor fuel. [Amended 3-14-2000 by L.L. No. 4-2000; 9-24-2002 by L.L. No. 4-2002]

B. Permits shall be issued to a vehicle for the transportation of LPG only after a full safety inspection of the vehicle by the Fire Prevention Division and the Fire Marshal approves of the issuance of the permit. [Amended 3-14-2000 by L.L. No. 4-2000]

C. Permits shall be valid for a period of one year. An approved marking shall be displayed on the vehicle for which said permit is issued.

D. The transportation of liquefied petroleum gas cylinders, either empty or full, is prohibited in the trunk of any passenger vehicle.

E. Cylinders larger than 10 gallons' water capacity or an aggregate amount in excess of 25 gallons shall not be transported in cars, vans or any type of enclosed vehicle or in the enclosed area of any vehicle.

§ 164-109. Certificate of fitness.

A. Certificate of fitness required. Except as set forth in Subsection M below, any person filling containers at locations where LPG is sold and/or transferred from one vessel into another shall hold a valid certificate of fitness issued by the Fire Prevention Division. Such certificate is subject to revocation by the Fire Prevention Division at any time where the certificate holder displays evidence of noncompliance with the provisions of this chapter. [Amended 3-14-2000 by L.L. No. 4-2000; 9-24-2002 by L.L. No. 4-2002]

B. Application. All applications for a certificate of fitness shall be filed with the Fire Prevention Division on forms provided by the Fire Prevention Division and accompanied by the applicable fees. [Amended 3-14-2000 by L.L. No. 4-2000]

C. Proof of qualifications. Every person applying for a certificate of fitness shall furnish satisfactory proof to the Fire Prevention Division that (s)he is familiar with the materials, formulas, tools, techniques, standards, laws, ordinances, recognized good practices, safety precautions and manufacturers' recommendations pertaining to the particular system, materials, devices or operations that (s)he will be involved with and for which the certificate of fitness is issued. (S)he shall further prove that (s)he is physically competent to perform any and all actions necessary or incidental to the operation for which the certificate of fitness is issued. [Amended 3-14-2000 by L.L. No. 4-2000]

D. Investigation and examination. The Fire Prevention Division shall investigate every new applicant for a certificate of fitness. The investigation shall include a written examination regarding the use, makeup and handling of LPG, and such investigation shall also include a practical test. When the Fire Prevention Division determines that the applicant conforms to all requirements of this chapter, a certificate of fitness shall be issued by the Fire Prevention Division. [Amended 3-14-2000 by L.L. No. 4-2000]

E. The certificate of fitness shall be given full force and effect for a period of three years.

F. Refusal of certificate of fitness. When the Fire Prevention Division determines that a candidate has failed to meet the requirements to obtain a certificate of fitness, the Division shall refuse to issue any such certificate. Any person may not apply again for the certificate of fitness within a ten-day period following the refusal of issuance. [Amended 3-14-2000 by L.L. No. 4-2000]

G. Transferability. A certificate of fitness shall not be transferable.

H. Renewal of certificate of fitness. An application for the renewal of a certificate of fitness shall be filed in the same manner as an application for an original certificate. Each such application shall be accompanied by applicable fees. The granting of a renewal of a certificate of fitness shall be accomplished in the same manner as for an original certification, except that any person continuously engaged in any activity for which a certificate of fitness is required will not, upon renewal, undergo the investigation as outlined in Subsection D above.

I. Certificate of fitness issued. A certificate of fitness will be required of any person performing the following activities:

- (1) Filling containers permanently located at consumer sites from a cargo vehicle.
- (2) Selling LPG or transferring LPG from one vessel to another.

J. Change of address. Each person holding a certificate of fitness shall notify the Fire Prevention Division, in writing, of any change in his business, residential or other notification address within 10 days after such change. Failure on the part of a person to give such notification shall constitute grounds for revocation of said certificate of fitness. [Amended 3-14-2000 by L.L. No. 4-2000]

K. Contents of certificate of fitness. A certificate of fitness issued by the Fire Prevention Division shall be in the form of an identification card. Said card shall contain the following information to be valid, and it will be the responsibility of the certificate holder to report a card lost, stolen or mutilated to receive a duplicate certification: [Amended 3-14-2000 by L.L. No. 4-2000]

- (1) The purpose for which the certificate of fitness has been issued.
- (2) The date of certificate of fitness issuance and the date of expiration.
- (3) Other information as may be necessary to properly identify the person to whom the certificate of fitness is issued.
- (4) The signature of the person to whom the certificate of fitness is issued.
- (5) Printed thereon the following: THIS CERTIFICATE DOES NOT EXCLUSIVELY RECOMMEND THE BEARER.

L. Requirement to display certificate of fitness. Any person to whom a certificate of fitness has been issued in conformance with this chapter shall, upon request, produce and show proper identification and the certificate of fitness to anyone for whom he seeks to render services, to any official of the Department of Public Safety or to any other law or code enforcement official. [Amended 3-14-2000 by L.L. No. 4-2000]

M. A driver of a motor vehicle from which (or to which) liquefied petroleum gas is sold, filled, transferred or delivered shall not be required to hold a certificate of fitness as required under this chapter. [Added 9-24-2002 by L.L. No. 4-2002]

§ 164-110. Reporting of incidents. [Amended 3-14-2000 by L.L. No. 4-2000]

Any incident involving LPG, including but not limited to leaks, fires, explosions or any other accidental discharge into the atmosphere in excess of 8.5 cubic feet (one pound of propane) must be reported to the Department of Public Safety and the Department of Environment and Waterways by the responsible party or his representative. The initial report may be made by telephone and followed by a written report. Under no circumstances shall a report be filed later than 24 hours after the incident, nor shall such reporting in the event of an emergency delay the reporting or notification to the local Fire Department and/or other emergency response forces.

§ 164-111. Storage, handling, installation, use and transfer.

The storage, handling, installation, use and transfer of LPG shall be in accordance with the appropriate standards of the NFPA, except that more restrictive requirements as specified in this Article shall take precedence over any NFPA requirements.

A. No LPG tank vehicle shall be left unattended on any street, highway, avenue or alley, provided that this shall not prevent the driver from a necessary absence from the truck in connection with the delivery of his load, except that during the actual discharge of the liquid, some responsible person shall

be present at the vehicle. Nothing in this section shall prevent stops for meals, provided that the street where the vehicle is temporarily stopped is well-lit and appropriate markers be placed indicating the presence of such vehicle.

B. Tank vehicles as described above shall not be parked or garaged in any buildings other than those specifically approved for such use by the Fire Prevention Division.

C. Tank vehicles containing flammable liquids shall not be parked outdoors at any one point for longer than one hour except, off the street, and at least 25 feet from any building and/or public roadway.