

SANTA ROSA FIRE DEPARTMENT

FIRE PREVENTION BUREAU

INSPECTION CHECKLIST

July 1, 2010



LIQUIFIED PETROLEUM GAS INSTALLATION

Address:		Permit #:
Inspector:	Date Inspected:	Status:
Inspector:	Date Inspected:	Status:
A-Approved, R-Re-inspection Required		

This Checklist outlines general requirements. Information contained herein applies to typical instances and may not address all circumstances.

CODE REFERENCES

2007 California Fire Code (CFC) Chapter 38
2004 National Fire Protection Association (NFPA) Standard 58

REQUIRED INSPECTIONS

- Fire Department Final – Above Ground Storage Tank for LPG

FILE REVIEW

- | | Y | N | |
|----|--------------------------|--------------------------|---|
| 1. | <input type="checkbox"/> | <input type="checkbox"/> | Is there an alternate method application approved? |
| 2. | <input type="checkbox"/> | <input type="checkbox"/> | Are there any special requirements or AM&M proposals? |
| 3. | <input type="checkbox"/> | <input type="checkbox"/> | Permit fees entered in Permits Plus? |

LOCATION AND INSTALLATION

- | | | | |
|----|--------------------------|--------------------------|--|
| 4. | <input type="checkbox"/> | <input type="checkbox"/> | CFC 3804 – Verify locations of containers with respect to property lines, buildings, and public ways meet the requirements of CFC Table 3804.3. |
| 5. | <input type="checkbox"/> | <input type="checkbox"/> | CFC 3808.4 – Verify multiple container installations or systems are subdivided into groups containing not more than 180,000 gallons and are separated by at least 50 feet unless tanks are protected by an approved manner. If protected, the distance can be reduced to 25 feet between groups. |
| 6. | <input type="checkbox"/> | <input type="checkbox"/> | CFC 3804.2 – Verify aggregate capacity can be limited to 2000 gallons water capacity in heavily populated areas as determined by the chief. |
| 7. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 58 - 6.4.5.1 – Verify containers shall not be stacked one above the other. |
| 8. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 58 - 6.4.5.2 – Verify loose or piled combustible material and weeds and long dry grass shall be separated from containers by a minimum of 10 ft (3 m). |

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LPG Installation

- | | Y | N | |
|----|--------------------------|--------------------------|---|
| 9. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 58 - 6.4.5.12 – Verify 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. |

PROHIBITED USE

- | | | | |
|-----|--------------------------|--------------------------|---|
| 10. | <input type="checkbox"/> | <input type="checkbox"/> | CFC 3805.1 – Verify equipment and devices powered by LP gas shall be approved for use with LP Gas and match approved plans. |
|-----|--------------------------|--------------------------|---|

SAFETY PRECAUTIONS

- | | | | |
|-----|--------------------------|--------------------------|---|
| 11. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 58 - 5.2.7.1 – Verify supports for vertical ASME containers of over 125 gal (0.5 m ³) water capacity meet approved plans. |
| 12. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 58 - 6.6.3.1 – Verify 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 that meet approved plans. |
| 13. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 58 - 6.6.3.2 – Verify ASME containers that have liquid interconnections shall be installed so that the maximum permitted filling level of each container is at the same elevation. |
| 14. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 58 - 6.6.3.5 – Verify the part of an ASME container in contact with saddles or foundations or masonry shall be coated or protected to minimize corrosion. |
| 15. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 58 - 5.7.4.1 – Verify containers of 2000 gal (7.6 m ³) water capacity or less shall be fitted with valves and other appurtenances in accordance with Table 5.7.4.1. |
| 16. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 58 - 5.7.5 – Verify liquid level gauging devices shall be installed on all containers filled by volume. |
| 17. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 58 - 5.7.8.1 – Verify container openings except those used for pressure relief devices, liquid level gauging devices, pressure gauges, double check filler valves, combination backflow check and excess-flow vapor return valves, actuated liquid withdrawal excess-flow valves, and plugged openings shall be equipped with internal valves or with positive shutoff valves and either excess-flow or backflow check valves. |
| 18. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 58 - 5.9.3.1 – Verify pipe is wrought iron or steel (black or galvanized), brass, copper, polyamide, or polyethylene (Polymide and polyethylene allowed outdoors underground only). |
| 19. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 58 - 5.9.3.2 – Verify tubing is steel, stainless steel, brass, copper, polyamide, or polyethylene (Polymide and polyethylene allowed outdoors underground only). |
| 20. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 58 - 5.9.6.1 – Verify hose, hose connections, and flexible connectors (<i>see 3.3.25, Flexible Connector</i>) shall be fabricated of materials that are resistant to the action of LP-Gas both as liquid and vapor and meet manufactures specifications. |
| 21. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 58 - 6.7.2.1 – Verify pressure relief devices shall be installed so that the relief device is in direct communication with the vapor space of the container. |
| 22. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 58 - 6.7.2.7 – Verify pressure relief valve discharge on each aboveground container of more than 2000 gal (7.6 m ³) water capacity shall be piped vertically upward to a point at least 7 ft (2.1 m) above the top of the container, and the discharge opening shall be unobstructed to the open air. |

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- | | Y | N | |
|-----|--------------------------|--------------------------|---|
| 23. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 58 - 6.7.2.8 – Verify shutoff valves shall not be installed between pressure relief devices and the container. |
| 24. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 58 - 6.8.1.1 – Verify if first-stage or high-pressure regulators shall be directly attached, or attached by flexible metallic connectors, to the vapor service valve used on stationary (permanent) container installations, and to interconnecting piping of manifolded stationary (permanent) container installations, or to a vaporizer outlet. |
| 25. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 58 - 6.9.2.1 – Verify LP-Gas vapor piping systems downstream of the first-stage pressure regulator shall be sized so that all appliances operate within their manufacturer's specifications. |
| 26. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 58 - 6.12.1 – Verify stationary container storage systems with an aggregate water capacity of more than 4000 gal (15.1 m ³) utilizing a liquid transfer line that is 1½ in. (39 mm) or larger and a pressure equalizing vapor line that is 1¼ in. (32 mm) or larger shall be equipped with emergency shutoff valves. |
| 27. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 58 - 6.14.1 – Verify assembly, piping systems (including hose) has been tested and proven free of leaks at not less than the normal operating pressure. |
| 28. | <input type="checkbox"/> | <input type="checkbox"/> | CFC 3807.4 (per NFPA 58) – Verify crash posts are present and filled with concrete and set a maximum of 48" on center, 3' from the tank shell. Where used for filling forklifts, crash posts may be required to be set closer together, or have curb protection provided. When forklifts are used, posts and/or curbs shall be 4' from the shell of the tank. |

TEMPORARY INSTALLATIONS

- | | | | |
|-----|--------------------------|--------------------------|---|
| 29. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 58 - 6.6.5.1 – Verify single containers constructed as portable storage containers for temporary stationary service (not more than 12 months at a given location). |
| 30. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 58 - 6.6.5.2 – Verify the surface on which the containers are placed shall be level and if not paved shall be clear of dry grass and weeds and other combustible material within 10 ft (3 m) of the container. |
| 31. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 58 - 6.6.5.3 – Verify flexibility shall be provided in the connecting piping in accordance with 6.9.6. |

FIRE PROTECTION

- | | | | |
|-----|--------------------------|--------------------------|---|
| 32. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 58 - 6.25.3.1 – Verify special fire protection shall be provided for installations with an aggregate water capacity of more than 4000 gal (15.1 m ³) and for ASME containers on roofs. |
| 33. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 58 - 6.25.4.1 – Verify roadways or other means of access for emergency equipment, such as fire department apparatus, shall be provided. |
| 34. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 58 - 6.23.4.2 – Verify that each industrial plant, bulk plant, and distributing point shall be provided with at least one approved portable fire extinguisher having a minimum capacity of 18 lb (8.2 kg) of dry chemical with a B:C rating. Where fire extinguishers have more than one letter classification, they can be considered to satisfy the requirements of each letter class. |
| 35. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 58 - 8.5.1 – Verify that storage locations, where the aggregate quantity of propane stored is in excess of 720 lb (327 kg), shall be provided with at least one approved portable fire extinguisher having a minimum capacity of 18 lb (9.2 kg) dry chemical with a B:C rating. |
| 36. | <input type="checkbox"/> | <input type="checkbox"/> | NFPA 58 - 8.5.2 – Verify that the required fire extinguisher shall be located no more than 50 ft. (15m) from the storage location. Where fire extinguishers have more than one letter classification, they can be considered to satisfy the requirements of each letter class. |

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6. **Y** **N**
 CFC 3807.2 – Verify smoking and other sources of ignition - No smoking signs shall be posted. Smoking within 15 feet of point of transfer, while filling operations are in progress shall be prohibited.

Table 5.7.4.1 Container Connection and Appurtenance Requirements for Containers Used in Other Than Bulk Plants and Industrial Plants

		1	2	3
Part	Appurtenance	Cylinders 2 Through 420 lb Propane Capacity	Stationary ASME Containers \leq 4000 gal Water Capacity ³	DOT and ASME Engine Fuel and Mobile Containers
A	Vapor shutoff valve ¹	R (CGA 555 outlet prohibited)	R	R with internal excess-flow valve
B	Liquid shutoff valve ¹	R with CGA 555 outlet and internal excess flow shutoff	R with internal excess flow shutoff	R with internal excess-flow valve
D	Pressure relief valve	R (see 5.7.2.2)	R ² [see 5.7.4.1(A)]	R (full internal or flush-type full internal pressure relief valve)
E	Fixed maximum liquid level gauge	R (filled by volume) R (filled by weight, \leq 40 lb and > 100 lb) [see 5.7.4.1(H)]	R	R
F	Overfilling prevention device	R (4 thru 40 lb) (see 5.7.3)	NR	R (ASME only) (see 5.7.4.1(E))
G	Actuated liquid withdrawal excess flow valve	NR	R (\geq 125 gal) [see 5.7.4.1(B) through 5.7.4.1(D)]	NR
H	Float gauge	NR	R (> 124 gal only)	NR
I	Double backflow check filler valve	R (\geq 100 lb filled on site)	R	R (ASME only)

R: Required. NR: Not required.

¹Where installed.

²Aboveground ASME containers, internal spring-type pressure relief valves only.

³All ASME container capacities are water capacity.

TABLE 3804.3 LOCATION OF CONTAINERS

Container Capacity (water gallons)	Minimum separation between containers and buildings, public ways, or lines of adjoining property that can be built upon		Minimum separation between containers ^{2,3} (feet)
	Mounded or Underground containers ¹ (feet)	Aboveground containers ²	
Less than 125 ^{2,4}	10	5 ³	None
125 to 250	10	10	None
251 to 500	10	10	3
501 to 2,000	10	25 ^{3,6}	3
2,001 to 30,000	50	50	5
30,001 to 70,000	50	75	(0.25 of sum of diameters of adjacent containers)
70,001 to 90,000	50	100	
90,001 to 120,000	50	125	

¹ Minimum distance for underground containers shall be measured from the pressure-relief device and the filling or liquid level gauge vent connection at the container, except that all parts of an underground container shall be 10 feet or more from a building or line of adjoining property which can be built upon.

² For other than installations in which the overhanging structure is 50 feet or more above the relief-valve discharge outlet. In applying the distance between buildings and ASME containers with a water capacity of 125 gallons or more, a minimum of 50 percent of this horizontal distance shall apply to all portions of the building which project more than 5 feet from the building wall and which are higher than the relief discharge valve outlet. This horizontal distance shall be measured from a point determined by projecting the outside edge of such overhanging structure vertically downward to grade or other level upon which the container is installed. Distances to the building wall shall not be less than those prescribed in this table.

³ When underground multicontainer installations are comprised of individual containers having a water capacity of 125 gallons or more, such containers shall be installed so as to provide access at their ends or sides to facilitate working with cranes or hoists.

⁴ At a consumer site, if the aggregate water capacity of a multicontainer installation, comprised of individual containers having a water capacity of less than 125 gallons, is 500 gallons or more, the minimum distance shall comply with the appropriate portion of Table 3804.3, applying the aggregate capacity per container. If more than one such installation is made, each installation shall be separated by at least 25'. Minimum distances between containers need not be applied.

⁵The following shall apply to aboveground containers installed alongside buildings:

1. Containers of less than a 125-gallon water capacity are allowed next to the building they serve when in compliance with items 2,3 and 4.
2. Department of Transportation specification containers shall be located and installed so that the discharge from the container pressure relief valve is at least 3' horizontally from building openings below the level of such discharge and shall not be beneath buildings unless the space is well ventilated to the outside and is not enclosed for more than 50 percent of its perimeter. The discharge from container pressure relief devices shall be located not less than 5' from exterior sources of ignition, openings into direct vent (sealed combustion system) appliances, or mechanical ventilation air intakes.
3. ASME containers of less than 125-gallon water capacity shall be located and installed such that the discharge from pressure relief devices shall not terminate in or beneath buildings and shall be located at least 5' horizontally from building openings below the level of such discharge and not less than 5' from exterior sources of ignition, openings into direct vent (sealed combustion system) appliances, or mechanical ventilation air intakes.
4. The filling connection and the vent from liquid level gauges on either DOT or ASME containers filled at the point of installation shall not be less than 10' from exterior sources of ignition, openings into direct vent (sealed combustion system) appliances, or mechanical ventilation air intakes.

⁶ This distance is allowed to be reduced to not less than 10' for a single container of 1,200-gallon water capacity or less, provided such container is at least 25' from other LP-gas containers of more than 125-gallon water capacity.

TABLE 3809.12 SEPARATION FROM EXPOSURES OF CONTAINERS AWAITING USE, RESALE OR EXCHANGE STORED OUTSIDE OF BUILDINGS FROM EXPOSURES

Quantity of LP-Gas stored (pounds)	MINIMUM SEPARATION DISTANCE FROM STORED CYLINDERS TO (feet):						
	Nearest important building or group of buildings or line of adjoining property that may be built upon	Line of adjoining property occupied by schools, places of worship, hospitals, athletic fields, or other places of public gathering; busy roads or sidewalks	LP-gas dispensing station	Doorway or opening to a building with two or more means of egress	Doorway or opening to a building with one means of egress	Combustible materials	Motor vehicle fuel dispensing
720 or less	0	0	5	5	10	10	20
721 – 2,500	0	10	10	5	10	10	20
2,501 – 6,000	10	10	10	10	10	10	20
6,001 – 10,000	20	20	20	20	20	10	20
Over 10,000	25	25	25	25	25	10	20

Table 6.6.3.3 Installation of Permanently Installed Horizontal ASME Containers with Attached Supports

Container Size		Attached Support	Height of Bottom of the Container
gal	m ³		
>2000	≥7.6	Nonfireproofed steel on flat-topped concrete foundations	6 in. (150 mm) maximum above concrete foundations
≤2000	≤7.6	Nonfireproofed steel on masonry or concrete foundations more than 12 in. (300 mm) above the ground	2 in.-12 in. (51 mm-305 mm) above concrete foundation
≤2000	≤7.6	Nonfireproofed steel on paved surfaces or concrete pads within 4 in. (100 mm) of the ground	24 in. (610 mm) maximum above paved surface or top of concrete pads
≤2000	≤7.6	Foundations or supports for horizontal LP-Gas containers per 6.6.3.3(B)	24 in. (610 mm) maximum above paved surface