

OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD

2520 Venture Oaks Way, Suite 350
Sacramento, CA 95833
(916) 274-5721
FAX (916) 274-5743
www.dir.ca.gov/oshsb



PROPOSED PETITION DECISION OF THE OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD (PETITION FILE NO. 491)

INTRODUCTION

The Occupational Safety and Health Standards Board (Board) received a petition on February 6, 2007, dated September 21, 2006, from Mr. Rob Scott, HazMat Director, representing the Western Propane Gas Association (Petitioner). The Petitioner requested that the Board amend Title 8, California Code of Regulations, Section 480(d)(5) of the Unfired Pressure Vessel Safety Orders (UPVSO), to permit the installation of underground liquid propane (LP) gas tanks designed with a multivalve unit¹.

Section 142.2 permits interested persons to propose new or revised standards concerning occupational safety and health, and requires the Board to consider such proposals, and render a decision no later than six months following receipt. Further, as required by Labor Code Section 147, any proposed occupational safety or health standard received by the Board from a source other than the Division must be referred to the Division for evaluation, and the Division has 60 days after receipt to submit a report on the proposal.

SUMMARY

The Petitioner is requesting that the Board adopt emergency amendments consistent with National Fire Protection Association (NFPA) 58 "Liquid Petroleum (LP) Gas Code" provisions that permit the installation of underground multivalve tanks. The Petitioner stated that multivalve units are used on propane tanks designed to be installed underground, and have been installed in residential settings in California for years.

Section 480(d)(5) states the following:

"The use of the following is prohibited...

(d)(5) Multivalves without excess –flow valves² and fixed dip tubes³ for use other than DOT cylinders." (Footnotes added by Board staff)

¹ Multivalve units combine several valve functions such as the pressure relief valve, vapor equalizer valve, filler valve and shut off valves into one unit.

² Excess –flow valves are designed to shut off the flow of gas in the event that a predetermined flow is exceeded.

³ Fixed dip tube. A fixed liquid level gauge that indicates the liquid level at which the container is filled to its maximum permitted filling limit.

NFPA 58 specifies the codes, standards and recommended practices for the installation of LP-Gas Systems. The Petitioner states that multivalves are used on American Society of Mechanical Engineers (ASME) propane containers designed to be installed underground. The Petitioner also states that the installation of multivalve underground containers (tanks) is consistent with the provisions in NFPA 58, Table 2-3.3.2(a) "*Container Connections and Appurtenance Requirements for Containers Used on Commercial, Domestic, Industrial; Engine Fuel, and Over-the-Road Mobile Applications.*"

The NFPA 58, LP-Gas Code, 1998, Edition permits the installation of certain multivalve LP-Gas containers including underground installations that are proposed by the Petitioner.

Federal OSHA's standards pertaining to the storage and handling of LP-Gases are contained in 29 CFR 1910.110. There is no federal OSHA standard similar to Title 8, Section 480(d)(5) that would prohibit the installation of multivalve tanks without excess-flow valves and fixed dip tubes.

DIVISION'S EVALUATION

The Division of Occupational Safety and Health (Division) described that when LP-Gas tanks are installed underground, access to the tank is normally provided through a single, cylindrical covered dome. Within the dome is a single large pipe with a manifold on top. All valves for the tank are threaded into this manifold. This includes the safety valve, service valves and outlet valves. The bleeder valve attached to the dip tube for determining the maximum fill level and the outage gage, which measures the amount of liquid propane in the tank, is also mounted on this manifold. The above method of manufacture, providing a single means of access to all tank connections, is the standard for underground LP-Gas tanks (which meet current Title 8 requirements)⁴. Should a problem or deficiency occur in any individual valve connection, it could be individually removed or corrected without removing the entire manifold.

The Division stated that excess flow valves prevent uncontrolled release of propane in the case of a line break downstream of the excess flow valve. Excess flow valves are designed to allow a predetermined rate of flow for liquid or gas during normal operation. When the flow exceeds that rate, as is the case when a downstream line break occurs, the valve closes and stops all flow. LP-Gas containers are required to have a dip tube permanently installed in the tank. The dip tube extends down into the tank to the maximum liquid fill level permissible for that particular type of tank.

Conventional multivalves, intended for use on aboveground tanks, are multiple valves mounted in one body, housing the safety relief valve, the fill valve, outlet valve and the liquid level indicating bleeder valve with a dip tube attached. Excess flow valves are normally not provided and the dip tube comes with this valve. When any one of the individual valves in a conventional (aboveground) multivalve tank is replaced, the entire multivalve body, along with the dip tube,

⁴ (Parenthetical language is added by Board staff for clarity)

has to be removed and replaced also. The dip tube provided with a conventional multivalve must be cut to length by the valve installer, making it possible or likely that a dip tube of incorrect length will be installed. Further, if the valve body or any valve in it were to break off due to impact, it could cause an uncontrollable release of propane. The Division stated that conventional multivalves installed on aboveground tanks do not provide as high a level of safety as single tank outlets with individual valves for each purpose.

The Division stated that multivalves used on underground tanks are really manifolds, having a separate threaded opening for a safety valve, liquid fill valve, vapor return valve (used in filling the tank), a vapor outlet valve and a bleeder valve connected to a dip tube. There is also provision for an outage gage. Any individual valve can be removed for replacement or repair without removing the manifold. There is no normal service or repair which would require the removal of the manifold and the dip tube is unlikely to ever be removed. Additionally, all valves can be protected by excess flow valves, according to the rules already provided in various sections of NFPA 58-1998 Edition Liquefied Petroleum Gas Code.

The Division recommends that multivalves of the type proposed by the Petitioner be allowed for use in underground tank installations only when each valve installed on the multivalve has a threaded opening and is individually replaceable without removing the manifold or other valves. The Division also recommends that excess flow valves be installed subject to a number of provisions contained in NFPA 58-1998 edition. The Division further indicated it would consider issuing an experimental variance to allow the use of multi-valves underground tanks subject to the recommendations in the Division's petition evaluation report.

BOARD STAFF'S EVALUATION

Board staff's evaluation dated May 15, 2007, states the necessity of installing LP-Gas tanks has increased as residential areas have expanded in areas where pipeline gas service is not available. Underground tanks are in greater demand not only for aesthetic reasons, but also because they reduce hazards for fire fighter personnel during wildland fires. This is because underground tanks are not subject to severe heat from fires and possible explosion hazards. According to the Petitioner and the Division's representative, the underground tank installations requested in the petition are limited in size to less than 2000 gallons of water capacity.

Board staff agrees with the Division's assessment that conventional multivalves installed on aboveground tanks do not provide as high a level of safety as single tank outlets with individual valves for each purpose. However, on multivalve units designed for underground tanks, any individual valve can be removed for replacement or repair without removing the entire multivalve unit or the dip tube. The dip tube remains in place as required by Section 473(a), and it is unlikely that the dip tube would ever be removed from the tank. Furthermore, the valves and components on a multivalve unit installed on underground tanks are not subject to physical contact (collision) damage specific to aboveground tanks.

Board staff notes that NFPA 58-1998, Section 2-3.3.2(a)4. states that, “Excess-flow protection is not required where an approved regulator is directly attached or attached with a flexible connector to the outlet of the manual shut off valve for vapor service and the controlling orifice between the container contents and the shutoff valve outlet does not exceed 5/16 inch (8 mm) in diameter.” The dedicated regulator required by this standard would significantly reduce propane release from the tank in the unlikely or rare event of a line break according to the Petitioner.

Board staff believes the provisions of Section 480(d)(5) are intended to address the hazards of conventional multivalve installations on aboveground tanks. Further, notwithstanding Section 480(d)(5), the NFPA 58-1998 standard which is incorporated by reference in the UPVSO, permits the installation of multivalve underground tanks as proposed by the Petitioner.

CONCLUSION AND ORDER

The Occupational Safety and Health Standards Board has considered the petition from Mr. Rob Scott, to amend Section 480(d)(5) of the UPVSO, to permit the installation of underground liquid propane gas tanks designed with a multivalve unit. The Board has considered the recommendations of the Division and Board staff and does not consider the petition to meet the requirements for the promulgation of an emergency standard. However, the Board has determined that the petition be GRANTED to the extent that a rulemaking be developed by the Division’s Pressure Vessel Unit. The Division should consider the following provisions:

1. Each valve installed on the multivalve unit shall be attached to a separate threaded opening and shall be individually replaceable without removing the entire multivalve unit, other valves or the dip tube (maximum liquid level gauge).
2. Excess-flow valves shall be installed as required by NFPA 58-1998 edition.

In the event that the Division issues an experimental variance, the data and evaluation of this variance should be considered along with the aforementioned provisions.