LP-GAS FIRE SAFETY ANALYSIS

The Office of the State Fire Marshal has, by reference within administrative rules, adopted National Fire Protection Association Standard #58 "LP-Gas Code" (2011 edition) as the statewide applicable rules for LP-Gases. NFPA 58 includes a requirement for the preparation of a Fire Safety Analysis for any LP-Gas container (tank) of greater than 4,000 gallons water capacity as well those containers located on roofs.

The FSA is a self-conducted audit of the safety features of a propane installation and an assessment of the means to minimize the potential for inadvertent propane releases from storage containers and during transfer operations. The assessment also includes an evaluation of the capabilities of local emergency response agencies as well an analysis of potential exposures to hazards from the installation to the neighborhood and from the surroundings to the LP-gas facility.

NFPA 58 addresses the requirements for a Fire Safety Analysis in Section 6.25.2 and 6.25.3:

6.25.2.1 The planning for the response to incidents including the inadvertent release of LP-Gas, fire, or security breach shall be coordinated with local emergency response agencies.

6.25.2.2 Planning shall include consideration of the safety of emergency personnel, workers, and the public.

6.25.3.1 Fire protection shall be provided for installations with an aggregate water capacity of more than 4000 gal (15.1 m3) and for ASME containers on roofs.

6.25.3.2 The modes of fire protection shall be specified in a written fire safety analysis for new installations and for existing installations that have an aggregate water capacity of more than 4000 gal (15.1 m3) and for ASME containers on roofs. Existing installation shall comply with this requirement within 2 years of the effective date of this code.

6.25.3.3 The fire safety analysis shall be submitted by the owner, operator, or their designee to the authority having jurisdiction and local emergency responders.

6.25.3.4 The fire safety analysis shall be updated when the storage capacity or transfer system is modified.

6.25.3.5 The fire safety analysis shall be an evaluation of the total product control system, such as the emergency shutoff and internal valves equipped for remote closure and automatic shutoff using thermal (fire) actuation, pullaway protection where installed, and the optional requirements of Section 6.26.

6.25.3.6 If in the preparation for the fire safety analysis it is determined that a hazard to adjacent structures exists that exceeds the protection provided by the provisions of this code, special protection shall be provided in accordance with 6.25.5.

The FSA and required assessment of the installation provides several important benefits:

- A structured assessment by which each facility can be evaluated for conformity of installed equipment with Code requirements.

- A means to evaluate the capability of systems and equipment installed to control and contain potential LP-Gas releases during day-to-day operations.

- An approach to evaluate the informational needs of the facility, based on factors such as the type and frequency of transfer operations, size of storage containers, location of the facility with respect to other buildings and the existing procedures and system in place.

- A means to describe product control and fire protection features which exceed minimum requirements of NFPA 58.

- A tool for facilitating a cooperative and effective dialogue with local emergency response agencies and authorities having jurisdiction

Since each facility or bulk storage plant presents unique physical and operational characteristics, the fire safety analysis is a tool used to assess the level of fire safety performance that a specific facility or bulk plant can be expected to provide. This FSA will also provide essential information on the facility and its operation to the local authority having jurisdiction and local emergency response agency. However, neither NFPA 58 nor the *"Liquefied Petroleum Gas Code Handbook"* provides detailed guidance on how to prepare or develop a written FSA.

As a result, a Fire Safety Analysis Manual was developed by the National Fire Protection Association (NFPA), the National Propane Gas Association (NPGA), and the Propane Education and Research Council (PERC). The Fire Safety Analysis Manual provides forms and a step-by-step method for completing a written Fire Safety Analysis (FSA) as required in NFPA 58, LP-Gas Code.

In addition to providing a valuable tool for system installers, consultants, and enforcement officials, the FSA Manual serves as a valuable reference for enforcement officials, especially those who may be unfamiliar with LP-gas facilities and the improvements made to product control features by:

- Providing a FSA template that allows for consideration of different size installations
- Establishing a uniform approach and defining common elements
- Developing simplified checklists and an example-based methodology for completing the analysis
- Utilizing technically-based guidance and support

The intent of the FSA Manual is to provide an easy-to-use procedure for LP-Gas facility owner and operators who are most familiar with the equipment technology and system operations and therefore qualified to complete the document. Knowledge of fire science and engineering principles is not required for the document to be useable by an owner, operator or authority having jurisdiction, because those principles have already been factored into the assessment criteria contained within the FSA.

The Fire Safety Analysis Manual and associated FSA forms are available as downloads and can be accessed at either of these two sites:

- National Fire Protection Association: www.nfpa.org
- National Propane Gas Association: www.npga.org