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America's Propane Company

Presents

NFPA 58 Emergency Shutdown Compliance (2011)

National Fire Protection Association
The authority on fire, electrical, and building safety

NFPA 58- 2011 Upgrades

- Introduced in the 2001 edition
- General Purpose of § 5.7.7.2 (2004 edit.)
  - Table 5.7.7.3
- Why Tank Opening Valve Changes?
  - For Increased Facility Safety
  - Ability to Stop Outward Flow of Product From the Tank
  - Ability to Close Valves from a Remote Location
  - Ability to Close Valves by Thermal Actuation

2011 Liquid Bulk Plant Valves

Table 5.7.7.3 Connection and Appurtenance Requirements for New and Existing Container Installations in Bulk Plants and Industrial Plants

Service	2001 gal Through 4000 gal W.C.[a]	Greater Than 4000 gal W.C.[a]	Requirements for Containers of Greater Than 4000 gal W.C. With and Without Internal Valves[b]	
			Without Existing Internal Valves (by 7/1/11)	With Existing Internal Valves
Vapor inlet	Option A or Option B or Option C	Option A or Option B or Option C	See Note	See Note
Vapor outlet	Option B or Option C	Option B or Option C	See Note	See Note
Liquid inlet	Option A or Option B or Option C	Option D or Option E	Option D or Option E or Option F or Option G	RT
Liquid outlet	Option B or Option C	Option E	Option E or Option H	RT

Option A: Positive shutoff valve installed as close as practical to a backflow check valve installed in the container.

Option B: Positive shutoff valve installed as close as practical to an excess flow valve installed in the container and sized in accordance with 5.7.11.1(H).

Option C: Internal valve installed in the container or an excess flow valve in accordance with 5.7.7.2(I).

Option D: Positive shutoff valve installed as close as practical to a backflow check valve designed for the intended application and installed in the container.

Option E: Internal valve installed in the container equipped for remote closure and automatic shutoff using thermal (fire) activation within 5 ft of valve or an excess flow valve in accordance with 5.7.7.2(I).

Option F: Emergency shutoff valve equipped for remote closure and automatic shutoff using thermal (fire) activation installed in the line upstream as close as practical to an existing positive shutoff valve/excess flow valve combination.

Option G: Backflow check valve designed for the intended application and installed in the line upstream as close as practical to the existing positive shutoff valve/excess flow valve combination.

Option H: Emergency shutoff valve equipped for remote closure and automatic shutoff using thermal (fire) activation, installed in the line downstream as close as practical to an existing positive shutoff valve/excess-flow valve combination.

RT: Equipping an existing internal valve for remote closure and automatic shutoff using thermal (fire) actuation within 5 ft of the internal valve.

Note: Vapor connections on containers installed prior to the effective date of the 2001 edition of NFPA 58 are not required to be modified.

[a]Applicable to installations constructed on or after the effective date of this code.

[b]Applicable to installations constructed prior to the effective date of this code.

Benefits - 2011 Upgrades

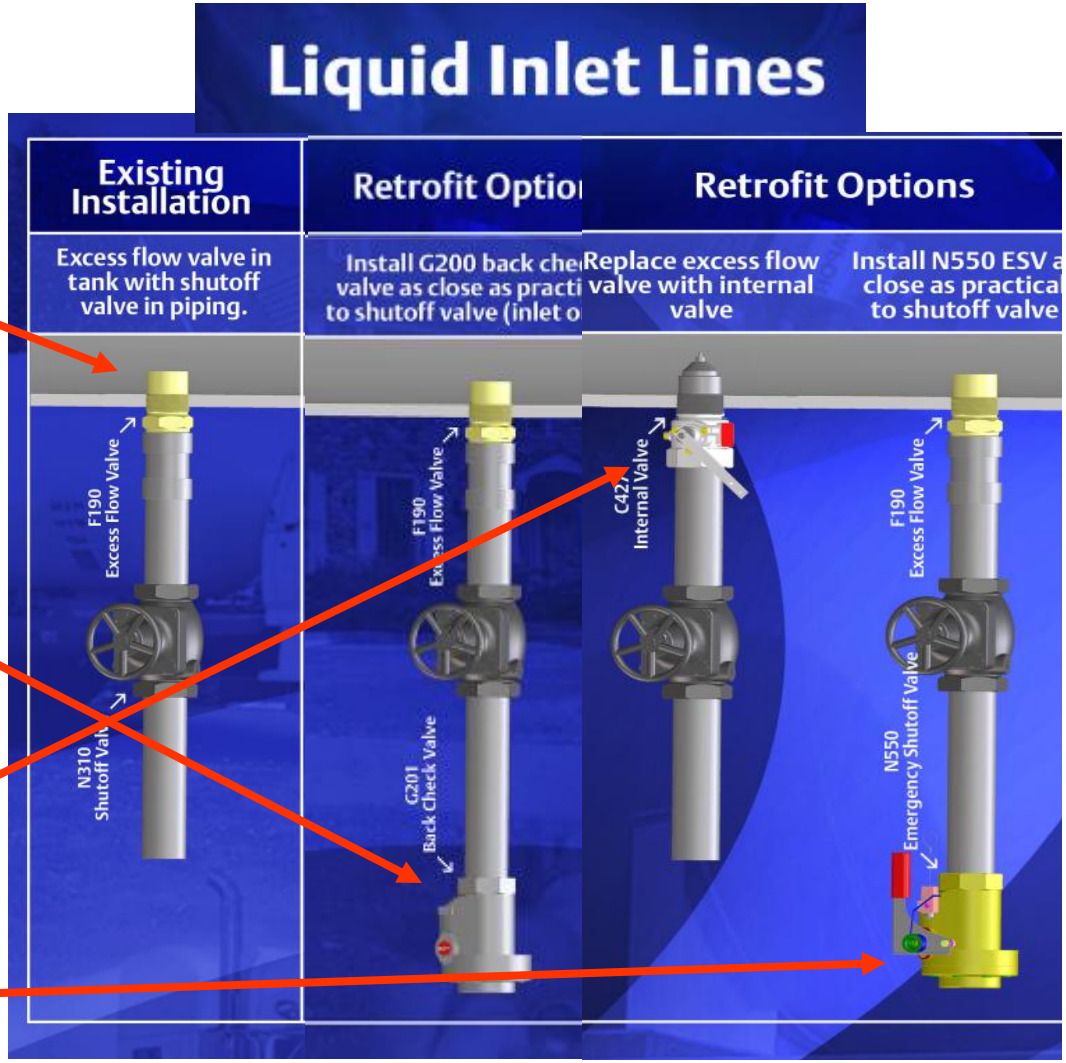
- **Primary goals of this code requirement:**
  - **Protect the public**
  - **Increase safety of fire fighting operations**
  - **Eliminate the need for large quantities of water to prevent tank failure when exposed to fire**

Benefits - 2011 Upgrades

- **Provides total shut down of facility either automatically or manually.**
- **Limits the extent of LPG than can be released to the atmosphere.**
- **Should there be ignition/fire:**
  - **Controllable by limiting the amount of fuel.**
  - **Size of fire should be small with minimum exposure to EEs, fire fighters and the public.**

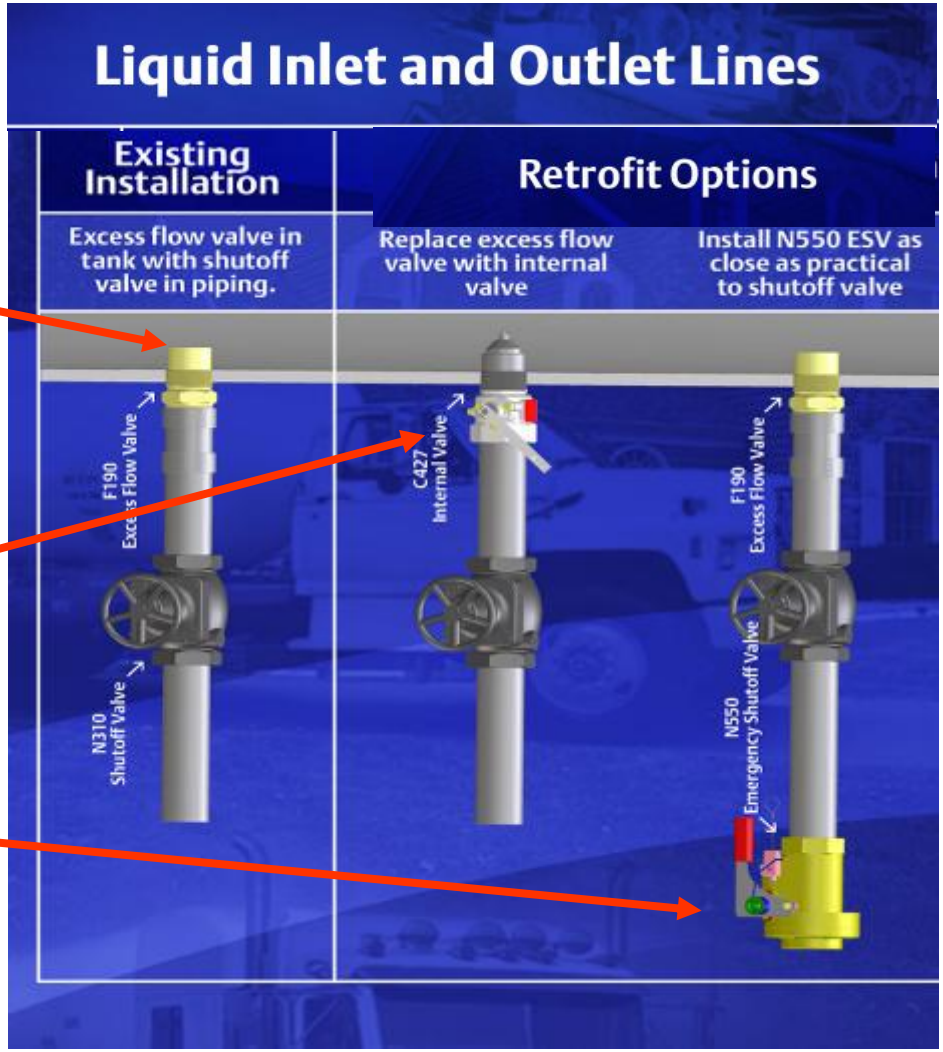
Liquid Inlet Only Lines – cont.

- **Existing Installation**
  - **Excess flow valve in tank with shutoff valve in piping.**
- **Retrofit Options**
  - **Install G200 back check valve as close as practical to the shutoff valve.**
  - **Replace excess flow valve with internal valve**
  - **Install N550 ESV as close as practical to shutoff valve.**



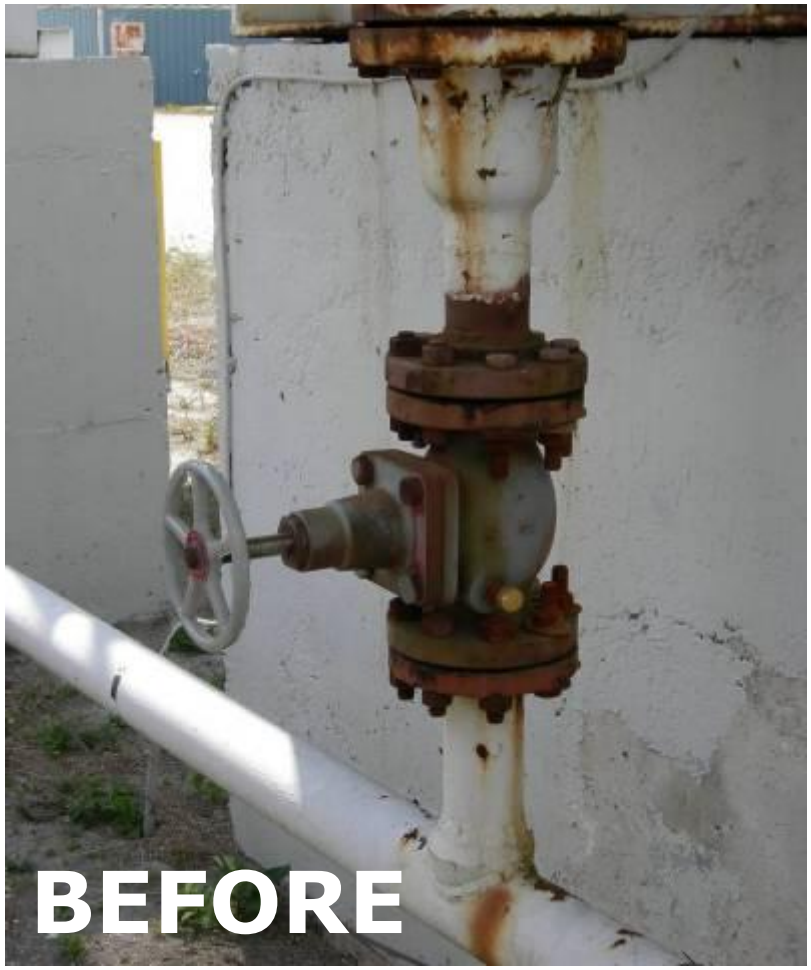
Liquid Inlet and Outlet Only Lines

- **Existing Installation**
  - **Excess flow valve in tank with shutoff valve in piping.**
- **Retrofit Options**
  - **Replace excess flow valve in tank with internal valve.**
  - **Install N550 ESV as close as practical to shutoff valve.**



Examples

- **Liquid Outlet**



Examples

- **Liquid Fill and Vapor Transfer**

Examples

- **Liquid Fill and Vapor Transfer**

Example - Vapor Distribution System


AFTER

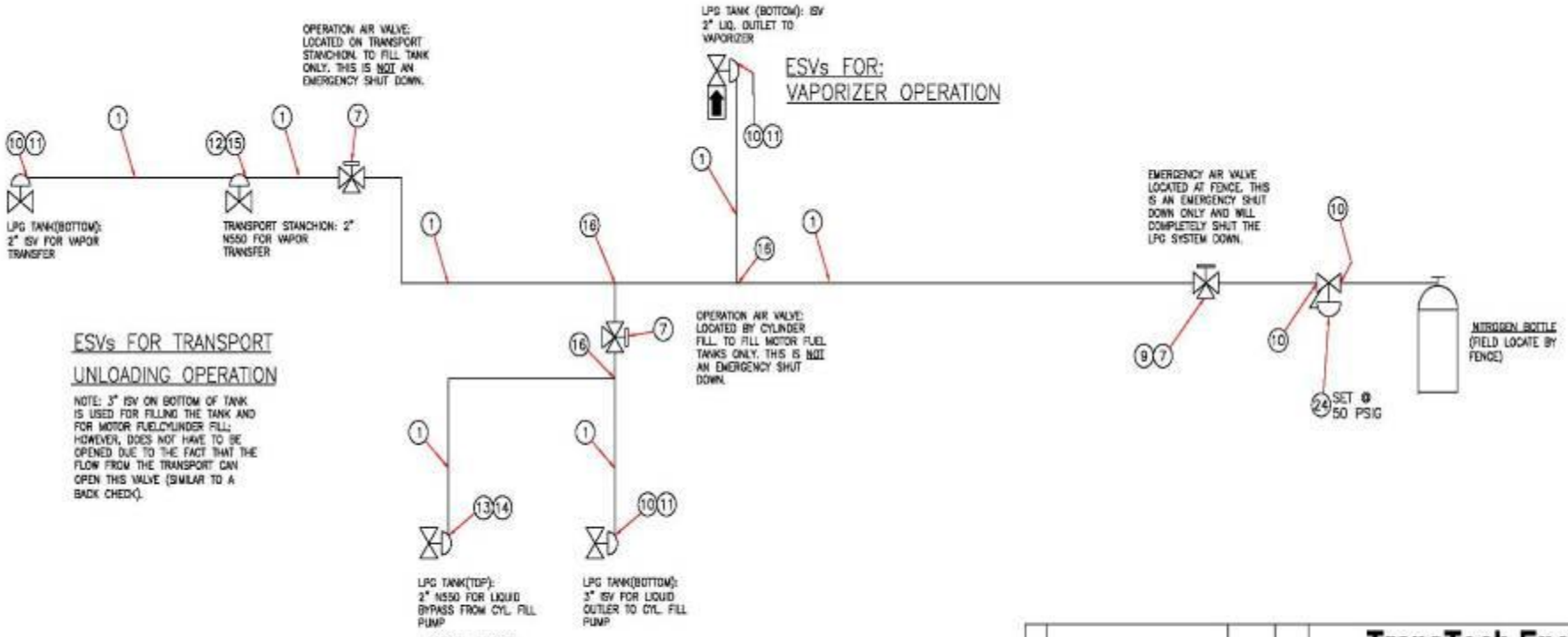

BEFORE


AFTER

BEFORE


AFTER

Pneumatic Diagram



Scope of Work

- **Install pneumatic actuated emergency shutoff valves (ESVs) in all liquid openings and/or vapor openings of each tank.**
  - **Step 1: Flare down (IVs Only)**
  - **Step 2: Dismantle key areas**
  - **Step 3: Install new ESVs (IVs or ESVs)**
    - **Install Pressure Relief Valves**
  - **Step: Install pneumatics and leak test piping**


BEFORE


AFTER


PROPANE
EMERGENCY
SHUTOFF