Public Comment No. 52-NFPA 30-2022 [Global Input]

See attached file on new chapter on fuel systems.

Additional Proposed Changes

File Name	Description	Approved
Fuel_Systems_Public_Comment_5-25.docx	Proposed New Chapter	

Statement of Problem and Substantiation for Public Comment

After having different standards for similar fuel systems, such as those for heating and stationary engines, a task group from NFPA 37 was assembled to look at combining the liquid fuels sections of NFPA 20, 30, 30A, 31, 37 and 110. The only fuels included in this work are light distillates such as No. 2 Heating Oil, Kerosene, Diesel, and Jet Fuel. Heavy oils and gasoline were excluded because they have substantially different physical properties compared to the fuel oils. This task group has been working for just over two years on what could become a new chapter in NFPA 30 so that these systems can be built with a common design standard. The best way to keep the standards for each system covered by the different NFPA documents listed above would be to put common requirements into NFPA 30. This allows the NFPA 30 Tanks committee to update these requirements as necessary, and all affected systems would receive the same updates. Each of the listed documents could then reference this chapter in NFPA 30.

The task group addressed the feedback from the First Draft meeting and these are shown in track changes compared to the First Draft submission. Additional work will continue to coordinate with the NFPA 31 committee to address valves and valve placement.

Related Item

• Committee Input 514

Submitter Information Verification

Submitter Full Name: Roy Creley
Organization: Lakes Region Environmental Inc
Street Address:
City:
State:
Zip:
Submittal Date: Tue May 31 10:05:19 EDT 2022
Committee: FLC-TAN

Committee Statement

Committee Action: Rejected but held

Resolution: A new chapter was proposed for fuel systems but the work was not completed this cycle. Work will continue for the next revision cycle.

Chapter 1 Administration

Commented [MM1]: On behalf of the submitter: Changes shown in this document are relative to the First Draft submission.

1.1.2
This code shall not apply to the following:

~~(8) *Storage, handling, and use of fuel oil tanks and containers connected with oil-burning equipment~~
~~**A.1.1.2(8)**~~
~~See NFPA 31~~

1.3.10
Chapters 21 through 25 shall apply to bulk storage of ignitible (flammable or combustible) liquids in tanks other than those in Chapter 26~~.~~

1.3.~~10~~ 11*
~~Chapter 27 shall apply to piping systems for transferring ignitible (flammable or combustible) liquids.~~

Chapter 26 shall apply to tanks, piping and components for use in appliances that are Class II and Class IIIA Liquids including diesel, No. 2 heating oil, and kerosene. This chapter also applies to similar biofuels.

1.3.~~11~~ 12
Chapter 27 shall apply to piping systems other than those in Chapter 26 for transferring ignitible (flammable or combustible) liquids.

Chapter 26 Tanks and Piping for Liquid Fuel-Burning Appliances

26.1* Scope.

This chapter shall apply to the following:

(1)* Tanks used to store or supply liquid fuel for use in liquid fuel-burning appliances

A.26.1(1) Such as used for heating, stand-by power or pumps.

(2)* Piping systems and components used to provide filling and venting of tanks and transfer of liquid fuel from tanks to appliances

A.26.1(2) Such as used for heating, stand-by power or pumps.

A.26.1
Also see PEI RP-100 *Recommended Practices for Installation of Underground Liquid Storage Systems*, RP-200 *Recommended Practices for Installation of Aboveground Storage Systems for Motor Vehicle Fueling*, and PEI RP-1400 *Recommended Practices for the Design and Installation of Fueling Systems for Emergency Generators, Stationary Diesel Engines and Oil Burner Systems* for additional guidance on these types of systems.

26.2 Definitions Specific to Chapter 26

Appliance – Any device that utilizes a fuel to produce heat, power, or to pump water.

Automatic Safety Shutoff Valve (ASSV)* A valve that automatically closes to prevent continued delivery of fuel if emergency conditions exist, such as a fire.

Day Tank. A listed tank installed in the supply piping between appliances and its main fuel supply tank.

Engine Mounted Tank - A fuel tank furnished and mounted on the engine or engine-frame by the engine manufacturer. [**37**]

Engineered System: A tank and/or piping system of engineered components designed by the manufacturer to work together as a system

Fuel System - Any arrangement of pipe, tubing, fittings, connectors, tanks, controls, valves, and devices designed and intended to store, supply or control the flow of fuel. [**1192]**

Integral tank. A tank that is furnished by the manufacturer as a part of the assembly that supplies fuel to appliances.

Main Tank. A separate fuel tank for supplying fuel to an appliance or day tank.

Sight Gauge. A continuous piece of clear tubing attached vertically to a fuel tank, connected at or near the top and bottom, used to give a visual indication of the fuel level in the tank.

26.3 Tanks
26.3.1 Basic Design and Construction of Tanks.
26.3.1.1

Tanks shall be designed and constructed to any shape or type consistent with sound engineering practice for the materials of construction used and shall be listed in accordance with one of the design standards specified in 26.3.1.7 or their approved equivalents. [**31**:7.2.1]

26.3.1.2

Tanks shall be installed and used in accordance with this standard and shall be approved for the specific appliance. [**31**:7.2.2]

26.3.1.3

Tanks meeting the requirements of Chapters 21, 22, and 23 shall be deemed as meeting the requirements of this section. [**31**:7.2.3]

26.3.1.4

Tanks shall be permitted to have combustible or noncombustible internal linings that are compatible with the intended liquid fuel(s). [**31**:7.2.4]

26.3.1.5

Tanks shall be sized so that the fuel is consumed within its storage life, or provisions shall be made to remediate fuel that is stale or contaminated or to replace stale or contaminated fuel with clean fuel. [**110**:7.9.1.3]

26.3.1.5 Tank Openings for Fill and Venting.
26.3.1.5.1*

All tanks shall be provided with top openings large enough to prevent abnormal pressures in the tank during normal operations (fill and withdrawal) ~~and emergency venting (fire exposure for aboveground tanks)~~, but not smaller than the nominal pipe sizes specified in Table 26.3.1.5.1. or as otherwise required by the listing of the tank.

Table 26.3.1.5.1 Minimum Diameter of Tank Vent Opening [31: Table 7.2.5.1]

Capacity of Tank (U.S. gal)	Diameter of Vent, Nominal Opening Size (in.)
660 or less	1¼
661 to 3,000	1½
3,001 to 10,000	2
10,001 to 20,000	2½
20,001 to 35,000	3

For SI units, 1 gal = 3.785 L, 1 in. = 25 mm.

A.26.3.1.5.1 Table 26.3.1.5.1 data up to 3,000 gallons were validated through testing with the Steel Tank Institute.

26.3.1.5.2 Tanks that have a UL listing requiring emergency venting shall be in accordance with NFPA 30 22.7 for aboveground storage tank fire exposure.

26.3.1.5.~~2~~ 3

Normal and emergency vent opening(s) shall be permitted to be either separate or combined, provided openings are sized in accordance with Table 26.3.1.5.1. or as otherwise required by the listing.

26.3.1.5.~~3~~ 4

Indoor venting shall only be allowed if approved.

26.3.1.5.~~4~~5*

Interstitial spaces of secondary containment tanks shall be provided with venting sized in accordance with Table 26.3.1.5.1. or as otherwise required by the listing.

A.26.3.1.5.5 NFPA 30 22.7 has emergency relief venting requirements for fire exposure for aboveground storage tanks.

26.3.1.5.~~5~~6*

Each compartment of a compartmented tank shall be provided with venting sized in accordance with Table 26.3.1.5.1. or as otherwise required by the listing.

A.26.3.1.5.5 See A.26.3.1.5.4.

26.3.1.6 Operating Pressures.
26.3.1.6.1

Tanks shall be permitted to be operated under normal operating conditions at pressures that do not exceed a gauge pressure of 1 psi (gauge pressure of 7 kPa), measured at the top of the tank, but shall be limited to a gauge pressure of 2.5 psi (gauge pressure of 17 kPa) under emergency venting conditions, also measured at the top of the tank. [**31**:7.2.6.1]

26.3.1.6.2

Where the vertical length of the fill and vent pipes is such that the static head imposed on the bottom of the tank exceeds a gauge pressure of 10 psi (70 kPa) if the pipes are filled with liquid, the tank and its related piping shall be tested hydrostatically to a pressure equal to the static head thus imposed. [**31**:7.2.6.2]

26.3.1.7 Design Standards.
26.3.1.7.1

Atmospheric tanks shall be constructed in accordance with one of the following or its approved equivalent:

(1) API Standard 650, *Welded Steel Tanks for Oil Storage*

(2) UL 58, *Standard for Steel Underground Tanks for Flammable and Combustible Liquids*

(3) UL 80, *Standard for Steel Tanks for Oil-Burner Fuels and Other Combustible Liquids*

(4) UL 142, *Standard for Steel Aboveground Tanks for Flammable and Combustible Liquids*

(5) UL 142A, *Standard for Special Purpose Aboveground Tanks for Specific Flammable and Combustible Liquids*

(6) UL 443, *Standard for Steel Auxiliary Tanks for Oil Burner Fuel*

(7) UL/ULC 1316, *Standard for Glass-Fiber-Reinforced Plastic Underground Storage Tanks for Petroleum Products, Alcohols, and Alcohol-Gasoline Mixtures*

(8) UL 1746, *Standard for External Corrosion Protection Systems for Steel Underground Storage Tanks*

(9) UL 2080, *Standard for Fire Resistant Tanks for Flammable and Combustible Liquids*

(10) UL 2085, *Standard for Protected Aboveground Tanks for Flammable and Combustible Liquids*

(11) UL 2245, *Standard for Below-Grade Vaults for Flammable Liquid Storage Tanks*

(12) UL/ULC 2258, *Standard for Nonmetallic Tanks for Oil Burner Fuels and Other Combustible Liquids* [**31**:7.2.7.1]

26.3.1.7.2

Tanks intended for use inside buildings and with a capacity between 10 gal (38 L) and 1320 gal (5000 L) shall be constructed in accordance with 26.3.1.7.1(3), 26.3.1.7.1(4), 26.3.1.7.1 (6), 26.3.1.7.1 (9), 26.3.1.7.1 (10), or 26.3.1.7.1(12). [**31**:7.2.7.2]

26.3.1.7.3

Tanks intended for use inside buildings and with a capacity greater than 1320 gal (5000 L) shall be constructed in accordance with 26.3.1.7.1(4), 26.3.1.7.1(5), 26.3.1.7.1(9), or 26.3.1.7.1(10). [**31**:7.2.7.3]

26.3.1.7.4

Tanks intended for use outside aboveground with a capacity no greater than 1320 gal (5000 L) shall be constructed in accordance with 26.3.1.7.1(3), 26.3.1.7.1 (4), 26.3.1.7.1(5), 26.3.1.7.1(9), 26.3.1.7.1(10), or 26.3.1.7.1(12). [**31**:7.2.7.4]

26.3.1.7.5

Tanks intended for use outside aboveground with a capacity greater than 1320 gal (5000 L) shall be constructed in accordance with 26.3.1.7.1(1), 26.3.1.7.1(4), 26.3.1.7.1(5), 26.3.1.7.1(9), or 26.3.1.7.1(10). [**31**:7.2.7.5]

26.3.1.7.6*
Tanks intended for use underground shall be constructed in accordance with 26.3.1.7.1(2), 26.3.1.7.1(7), or 26.3.1.7.1(8). Tanks constructed in accordance with 26.3.1.7.1(2) shall be protected in accordance with either of the following:

(1) An approved cathodic protection system that is engineered, installed, and maintained in accordance with recognized standards

(2) Approved or listed external corrosion-resistant systems or materials integral with the tank [**31**:7.2.7.6]

A.26.3.1.7.6
See UL 1316, *Standard for Glass-Fiber-Reinforced Plastic Underground Storage Tanks for Petroleum Products, Alcohols, and Alcohol-Gasoline Mixtures*; UL 1746, *Standard for External Corrosion Protection Systems for Steel Underground Storage Tanks*; and STI ACT-100, *Specification for External Corrosion Protection of FRP Composite Steel Underground Tanks*, F894. [**31**: A.7.2.7.6]

26.3.1.7.7*
If a tank is installed in a vault outside the building, either above or below grade, the vault shall be constructed in accordance with ~~26.3.1.7.1(11). [**31**:7.2.7.7]~~ NFPA 30 Chapter 25.

A.26.3.1.7.7

The type of vault being referred to in this paragraph is not the same as that referred to in 26.3.4.13.3 or 26.3.4.13.4. [**31**:A.7.2.7.7]

26.3.1.8 Areas Subject to Flood or Earthquake.

Where a tank is located in an area that is designated as subject to flood or earthquake, the following additional requirements shall apply to the tank, its connections, and its foundation and supports, as appropriate. [**31**:7.2.8]

26.3.1.8.1*

Where the tank is subject to flooding it shall be anchored.

A.26.3.1.8.1

Anchoring requirements may include NFPA 30, FEMA's *Principles and Practices for the Design and Construction of Flood Resistant Building Utility Systems* [Section 3.2 - New and Substantially Improved Buildings: Fuel Systems, 1999], or local requirements.

26.3.1.8.2*

When in a designated seismic zone, the local requirements for earthquake resistance shall be met. [**31**:7.2.8.2]

A.26.3.1.8.2

Potential requirements are in FEMA's *Principles and Practices for the Design and Construction of Flood Resistant Building Utility Systems* [Section 3.2 - New and Substantially Improved Buildings: Fuel Systems, 1999].

26.3.2 Supports and Foundations.

26.3.2.1*

Tanks and their supports shall rest on foundations made of solid concrete to minimize uneven settling.

A.26.3.2.1

Appendix E of API Standard 650, Welded Steel Tanks for Oil Storage, provides information on tank foundations. [**31**:A.7.3.1]

26.3.2.2

The tank foundation shall be designed to minimize corrosion in any part of the tank resting on the foundation.

26.3.2.3

Tank foundations with rain grooves or tanks with integral supports that provide an air gap between the tank and concrete shall be permitted.

26.3.2.4

Tank supports shall be able to withstand the load exerted and be of concrete, solid masonry, or steel.

26.3.2.5

For outside aboveground tanks, the supports shall be firmly anchored to the foundation.

26.3.2.6

Steel supports for any outside aboveground tank whose capacity exceeds 660 gal (2500 L) shall be considered protected if they meet one of the following methods and are approved by the authority having jurisdiction:

(1) They are protected by materials having a fire resistance rating of not less than 2 hours.

(2) They are not otherwise protected, but are less than 12 in. (0.3 m) high at their lowest point.

(3) They are protected by a water spray system that meets the requirements of NFPA 15 or NFPA 13. [**31**:7.3.4]

26.3.2.7

Every tank shall be supported in such manner that excessive concentrations of loads on the supporting portion of the shell are prevented. [**31**:7.3.5]

26.3.2.8

In areas subject to earthquake, tank supports and connections shall be designed to resist damage as a result of such shocks. [**31**:7.3.6]

26.3.3 Installation of Underground Tanks.

26.3.3.1

This section shall apply to tanks installed underground including those buried beneath structures.

26.3.3.2

Excavations for underground tanks shall be made in accordance with applicable building codes to avoid undermining the foundations of existing structures. [**31**:7.4.2]

26.3.3.3

Underground tanks and tanks buried beneath structures shall be located with respect to foundations and supports so that the loads carried by the latter cannot be transmitted to the tank. [**31**:7.4.3]

26.3.3.4

The distance from any part of an underground tank to the nearest wall of any basement or pit or to any property line shall not be less than 1 ft (0.3 m). [**31**:7.4.4]

26.3.3.5*

Underground tanks shall be installed in accordance with manufacturers' instructions and in accordance with applicable requirements of Chapter 23. [**31**:7.4.5]

A.26.3.3.5

For additional information, see PEI RP-100, *Recommended Practices for Installation of Underground Liquid Storage Systems* [**31**:A.7.4.5]

26.3.3.6

Underground tanks shall be equipped with vent opening(s) for each tank compartment ~~and interstitial space~~, which shall be arranged to discharge to the open air outside of buildings in accordance with 26.3.1.5.

26.3.3.7*

Underground tanks that are taken out of service shall be removed or permanently closed in accordance with the applicable requirements of Annex C. [**31**:7.4.7]

26.3.4 Installation of Tanks Inside Buildings.

26.3.4.1

This section shall apply to tanks installed inside buildings, ~~either enclosed or unenclosed~~ whether the building is completely enclosed or not, as herein described.

26.3.4.2

A safety can of less than 6.5 gal (26 L) capacity shall be permitted to be used for temporary fuel storage. It shall comply with UL 30, *Standard for Metal Safety Cans*, or UL 1313, *Standard for Nonmetallic Safety Cans for Petroleum Products*, and shall be specifically approved only for temporary use. [**31**:7.5.2]

26.3.4.3

A supply tank of 60 gal (227 L) or less capacity shall be constructed in accordance with UL 142A, *Standard for Special Purpose Aboveground Tanks for Specific Flammable or Combustible Liquids*, and shall be specifically approved for permanent or temporary purposes. [**31**:7.5.3]

26.3.4.4

A supply tank that exceeds 60 gal (227 L) capacity shall be installed on the lowest floor (story, cellar, or basement) of a building, except as provided for in 26.3.4.5. [**31**:7.5.4]

26.3.4.5

A maximum of 660 gal (2500 L) of storage tank capacity shall be permitted to be installed on a higher floor, provided that the tank is contained with a liquidtight sill, containment device, or equivalent means having the ability to hold a minimum capacity equal to the largest tank to prevent spilled liquid fuel from leaving the immediate area.

26.3.4.6

A tank of less than 10 gal (38 L) capacity shall not be placed within 2 ft (0.6 m) from any ignition source, either in or external to the appliance being served, nor shall it be placed in a manner such that the temperature of the fuel in the tank exceeds the temperature of its surroundings by 25°F (14°C) or more. [**31**:7.5.6]

26.3.4.7

A tank of capacity between 10 gal and 1320 gal (38 L and 5000 L) shall not be placed within 5 ft (1.5 m) horizontally from any open flame or appliance unless separated from the source of heat by a barrier having a 1-hour fire resistance rating extending horizontally at least 1 ft (0.3 m) past the appliance or the tank, whichever is greater, and extending vertically from floor to ceiling. [**31**:7.5.7]

26.3.4.8

A tank ~~of a capacity between 10 gal and 330 gal (38 L and 1250 L)~~ that is provided with an opening in the bottom for use as a fuel supply connection to an appliance or as a drain shall be arranged as follows:

(1) The tank shall be pitched toward the opening with a slope of not less than 1/4 in./ft (20 mm/m).

(2) Each supply line shall be provided with a readily accessible, thermally actuated automatic shutoff valve installed as close as practical to the tank. *(See also 26.4.6.3)*.

(3) A properly sized and rated fuel filter or strainer shall be installed in the fuel supply line to the appliance downstream and within 6 in. (150 mm) of the thermally actuated automatic shutoff valve required by 26.3.4.8(2).

(4) Where three or more tanks are installed as part of a fuel storage system, each appliance supply line shall be provided with its own readily accessible shutoff valve.

(5) A combination valve that functions as a shutoff and a thermally actuated valve that complies with (2) and (4) is acceptable.

26.3.4.9

Each tank shall be equipped with separate fill and vent openings unless connected as shown in Figure 26.4.8.2, Figure 26.4.8.3, and Figure 26.4.8.4.

26.3.4.10
Each tank shall be equipped with a gauging device that indicates full, empty, and a minimum of four equal divisions.
26.3.4.10.1
Where tanks are cross-connected, as shown in Figure 26.4.8.2, Figure 26.4.8.3, and Figure 26.4.8.4, gauges shall only be installed in the vented tank(s). [**31**:7.5.10.1]
26.3.4.11
Any unused opening in a tank shall be closed by a metallic vaportight threaded plug or cap. [**31**:7.5.11]
26.3.4.12
A tank or tank system shall be permitted to supply more than one appliance. [**31**:7.5.12]
26.3.4.13
Where a tank or tank system is not located in a dedicated room or enclosure, the maximum capacity in the building shall not exceed 1320 gal (5000 L), unless the installation meets the criteria in 26.3.4.13.1 or 26.3.4.13.2.
26.3.4.13.1
Fuel tanks of any size shall be permitted within a mechanical room, provided the room is designed using recognized engineering practices with suitable fire detection, fire suppression, and containment means to prevent the spread of fire beyond the room of origin. [**31**:7.5.13.1]
26.3.4.13.2
Where a tank or tank system is not located in a dedicated room or enclosure, but is separated from other tank(s) by construction having a fire resistance rating of at least 2 hours, the maximum capacity in each separate area shall not exceed the quantity specified in 26.3.4.13. The maximum total capacity in the building shall not be limited. [**31**:7.5.13.2]
26.3.4.13.3
Where a tank or tank system is located in a dedicated room or enclosure that is separated from the rest of the building by construction having a fire resistance rating of at least 1 hour, the maximum total capacity in the room shall not exceed 1320 gal (5000 L). [**31**:7.5.13.3]
26.3.4.13.4
Where a tank or tank system is located in a dedicated room or enclosure that is separated from the rest of the building by construction having a fire resistance rating of at least 3 hours, the maximum total capacity in the room shall be permitted to exceed 1320 gal (5000 L) for a nonengineered system. [**31**:7.5.13.4]
26.3.4.13.5
Dedicated rooms or enclosures shall meet all applicable requirements of Section 26.3.5. [**31**:7.5.13.5]
26.3.4.13.6
Tanks shall not obstruct ready access to any utility service meters, electrical panelboards, or shutoff valves. [**31**:7.5.13.6]
26.3.5 Requirements for Dedicated Tank Rooms and Tank Enclosures.
26.3.5.1
Unless otherwise provided with secondary containment, each tank room or tank enclosure shall have a doorway with a noncombustible liquidtight sill or ramp at least 6 in. (150 mm) high and a self-closing, listed fire door that meets the requirements of NFPA 80.
26.3.5.1.1
If the sill or ramp is more than 6 in. (150 mm) high, the walls of the room or enclosure shall be built to withstand the static head that would be expected in event of a fuel spill, up to the height corresponding to the expected spill depth. [**31**:7.6.1.1]
26.3.5.2
Fire doors for rooms or enclosures of 2-hour fire-resistant construction shall have a fire protection rating of 1½ hours. [**31**:7.6.2]
26.3.5.3
Fire doors for rooms or enclosures of 3-hour fire-resistant construction shall have a fire protection rating of at least 3 hours. [**31**:7.6.3]
26.3.5.4
Each tank room or tank enclosure shall be provided with either portable or permanent means to ventilate the room or enclosure prior to its being entered ~~for inspection or repair~~.
26.3.5.5
A tank installed in a room or area having a fire resistance rating of 2 hours or less shall be of such size and shape that it can be installed in and removed from the room or area and from the building as a single unit. [**31**:7.6.5]
26.3.6 Day Tanks.
26.3.6.1
Day tanks shall be used only for connection in the supply line between the main tank and the appliance.
26.3.6.2
Day tanks shall be listed.
26.3.6.3
Day tanks shall be filled by pump transfer through continuous piping from the main supply tank.

26.3.6.4* Day tanks shall have float switches or other means to automatically control oil levels, ~~and~~ prevent overfill, and activate alarms.~~.~~

26.3.6.4.1 An alarm and shutoff means shall be installed to provide a secondary high-level shutoff to prevent overfill.

A.26.3.6.4. Other levels may include, but not be limited to, low level or critical high level.

26.3.7 Installation of Outside Aboveground Tanks.

26.3.7.1

This section shall apply to tanks that are installed aboveground outside of buildings.

26.3.7.2

A tank or tanks whose capacity does not exceed 660 gal (2500 L) shall be permitted to be installed outside of and adjacent to a building, provided they are separated from the nearest line of adjoining property by the following minimum distance:

(1) 5 ft (1.5 m) for tanks not exceeding 275 gal (1040 L) capacity

(2) 10 ft (3 m) for tanks greater than 275 gal (1040 L) capacity, but not exceeding 660 gal (2500 L) capacity [**31**:7.8.2]

26.3.7.3

A tank or tanks whose capacity exceeds 660 gal (2500 L) shall be installed in accordance with all applicable requirements of Chapter 22. [**31**:7.8.3]

26.3.7.4*

Outside aboveground tanks and their appurtenances and supports shall be protected from external corrosion by a coating suitable for exterior use. [**31**:7.8.4]

A.26.3.7.4

Primer paints do not qualify as suitable corrosion protection. The asphaltum coating or rust-inhibiting material typically used on outside tanks does meet the intent of this requirement for external corrosion protection [**31**:A.7.8.4]

26.3.7.5

Tanks that are intended for temporary supply to an appliance shall be listed for the intended use.

26.3.7.6

Outside aboveground tanks shall also comply with 26.3.4.8 through 26.3.4.12 and with 26.3.4.13.6. [**31**:7.8.6]

26.3.7.7

When a steel single-wall aboveground tank is fitted with a side outlet or is installed in a top draw configuration, and is located outside, it shall be installed within a secondary containment large enough to contain 110 percent of the tank's content. [**31**:7.8.7]

26.3.8 Tank Heating Systems.

26.3.8.1

Where tanks are provided with heating systems to maintain fuel at the required temperature for proper atomization, the heating systems shall meet the requirements of 26.3.8.2 through 26.3.8.4, as applicable. [**31**:7.9.1]

26.3.8.2*

Where tanks are heated by steam coils, the maximum operating pressure of the steam coils shall not exceed a gauge pressure of 15 psi (gauge pressure of 105 kPa). [**31**:7.9.2]

A.26.3.8.2

Tank heaters connected so that condensate or water is not returned to the boiler are preferred. [**31**:A.7.9.2]

26.3.8.2.1

Where a pressure-reducing valve is used to limit the steam pressure to a gauge pressure of 15 psi (gauge pressure of 105 kPa) or less, the following shall apply:

(1) A relief valve set at not more than a gauge pressure of 5 psi (gauge pressure of 35 kPa) above the normal pressure in the coil shall be provided.

(2) Provision shall be made to limit the steam temperature to 250°F (121°C). [**31**:7.9.2.1]

26.3.8.3

Where tanks are heated by hot water coils, the hot water shall be provided by indirect heaters and the maximum temperature of the water shall be limited to 250°F (121°C). [**31**:7.9.3]

26.3.8.4

Where tanks are heated by electric heaters, the heaters shall be equipped with listed and approved thermostats designed to prevent the fuel from exceeding its minimum flash point. [**31**:7.9.4]

26.3.9 Special Storage Arrangements.

In particular installations, the provisions of Chapter 26 shall be permitted to be altered by the authority having jurisdiction after consideration of special features such as the following:

(1) Topographical conditions, barricades, walls, and proximity to buildings or adjoining property

(2) Height and character of construction and nature of occupancies of such buildings

(3) Capacity and construction of proposed fuel tanks

(4) Characteristics and properties of the combustible liquid fuels to be stored

(5) Degree of private fire protection to be provided

(6) Capability of the fire department to cope with combustible liquid fires [**31**:7.10]

26.3.10 Tank Leakage Testing and Periodic Inspection.

26.3.10.1*

~~Except as provided for in 26.3.10.1, all~~ All tanks, whether shop-built or field erected, shall be tested before they are placed in service in accordance with the requirements of the code under which they were built, according to manufacturer's instructions or as per NFPA 30.

A.26.3.10.1~~.1~~
An ASME code stamp or a listing mark acceptable to the authority having jurisdiction ~~shall~~ can be used as evidence of compliance with this test. ~~[**31**:7.11.1.1]~~

26.3.10.~~1.~~2

Each storage tank that has been structurally damaged, repaired, reconstructed, relocated, jacked, or damaged by impact, flood, or other trauma, or is suspected of leaking shall be inspected and tested in accordance with Section 21.5 or in a manner acceptable to the authority having jurisdiction. [**30**:21.8.5].

26.3.10.3~~2~~
Following completion of a new installation, the tank and its piping shall be inspected for leakage during the initial fill by a qualified technician and, if a leak is found, the tank or piping shall be repaired and retested. [**31**:7.11.2]

26.3.10.4~~3~~
Each tank shall be periodically inspected by a qualified technician for evidence of leakage and shall be maintained liquidtight. Tanks found to be leaking shall be repaired or replaced. [**31**:7.11.3]

26.3.11 Abandonment and Removal from Service of Tanks and Related Equipment.
Except as provided for in 26.3.11.1, if a tank and its related piping are abandoned for whatever reason, the tank and all piping connected to it, including the outside fill and vent piping and any piping connected to the appliance, shall be emptied of all contents, cleaned, removed from the premises or property, and disposed of in accordance with applicable local, state, and federal rules and regulations. [**31**:7.12]

26.3.11.1
The party responsible for the abandonment and removal of a tank shall submit an affidavit of compliance to the authority having jurisdiction or to the tank owner stating that such fuel storage system was abandoned and removed from service, in compliance with this section.

26.3.11.2~~1~~
If an appliance is converted to an alternate fuel, but the tank is kept in place so that it can be returned to service at some future date, the following requirements shall be met before the alternate fuel is used:

(1) The entire contents of the tank shall be completely removed and the tank purged of all vapors.

(2) The fuel tank vent line shall remain intact and open.

(3) The outside fill pipe shall be removed and the tank opening shall be capped or plugged or the outside fill pipe shall be capped and filled with concrete, and all remaining piping, other than the vent line, shall be capped or sealed. [**31**:7.12.1]

26.3.12 Fuel Storage Systems That Are Permanently Taken Out of Service.
26.3.12.1
If a fuel storage tank is permanently removed from service for whatever reason, the tank and all piping connected to it, including the outside fill and vent piping and any supply piping connected to the appliance, shall be:

(1) Emptied of all liquid contents and sludge

(2) Cleaned and rendered free of combustible vapors

(3) Removed from the premises or property

(4) Properly disposed of in accordance with all applicable local, state, and federal rules and regulations [**31**:7.13.1]

26.3.12.2
The ~~remover/installer of a tank taken out of service~~party responsible for the closure of a tank shall submit an affidavit of compliance to the authority having jurisdiction or to the tank owner stating that such fuel storage system was removed from service, in compliance with this section. ~~[**31**:7.13.2]~~

26.3.13 Permanent Abandonment of Underground Tanks.
If an underground fuel storage tank is permanently removed from service, the requirements of Annex C shall apply. ~~[**31**:7.14]~~

26.4 Piping Systems and Components

26.4.1 Acceptable Piping — Types and Materials.

26.4.1.1
Tank fill and vent piping shall be one of the types listed in 26.4.1.1.1 and 26.4.1.1.2.

26.4.1.1.1
For aboveground fill and vent piping, only the following types and materials shall be permitted:

(1) Minimum Schedule 40 steel pipe that complies with either ANSI/ASME B36.10M, *Standard on Welded and Seamless Wrought Steel Pipe*; ASTM A53/A53M, *Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless;* or ASTM A106/A106M, *Standard Specification for Seamless Carbon Steel Pipe for High-Temperature Service*

(2) Minimum Schedule 40 stainless steel pipe that complies with ASTM A312/A312M, *Standard Specification for Seamless, Welded, and Heavily Cold Worked Austenitic Stainless Steel Pipes*

(3) Minimum schedule 10 steel and stainless steel vent piping equal to or greater than 4 inch diameter that complies with the standards listed in (1) and (2) shall be permitted as part of an engineered system.

(4) Other piping that is part of an engineered fuel storage system that is listed to UL 180, *Standard for Combustible Liquid Tank Accessories*, installed in accordance with manufacturer's instructions, and approved by the authority having jurisdiction [**31**:8.2.1.1]

(5) Other piping that is part of an engineered fuel storage system that is listed to UL 1369, *Aboveground Piping for Flammable and Combustible Liquids*, installed in accordance with manufacturer's instructions, and approved by the authority having jurisdiction

(6) ~~Minimum Schedule 40 brass pipe that complies with ASTM B43, *Standard Specification for Seamless Red Brass Pipe, Standard Sizes*~~

26.4.1.1.2
For underground fill and vent piping, only the following types and materials shall be permitted:

(1) Listed nonmetallic piping that complies with UL 971, *Standard for Nonmetallic Underground Piping for Flammable Liquids*

(2) Listed metallic piping that complies with UL 971A, *Outline of Investigation for Metallic Underground Piping for Flammable Liquids* or UL 180, *Standard for Combustible Liquid Tank Accessories*

(3) Steel pipe that meets 26.4.1.1.1(1) and provided with corrosion protection consistent with NFPA 30 27.6.4.

(4) ~~Brass pipe that meets 26.4.1.1.1(6)~~

(5) Stainless steel pipe that meets 26.4.1.1.1(2) [**31**:8.2.1.2]

26.4.1.2
Fuel supply lines shall be one of the piping types listed in 26.4.1.2.1 or 26.4.1.2.2.

26.4.1.2.1
For aboveground fuel supply lines, only the following types and materials shall be permitted:

(1) Minimum Schedule 40 steel pipe that complies with ANSI/ASME B36.10M, *Standard on Welded and Seamless Wrought Steel Pipe*; ASTM A53/A53M, *Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless;* or ASTM A106/A106M, *Standard Specification for Seamless Carbon Steel Pipe for High-Temperature Service*

(a) Galvanized steel pipe shall not be used for supply lines.

(2) Minimum Schedule 40 brass pipe no greater than 0.5-inch inner diameter that complies with ASTM B43, *Standard Specification for Seamless Red Brass Pipe, Standard Sizes*

(3) Flexible metal pipe listed to UL 2039, *Standard for Safety for Flexible Connector Piping for Fuels*, and rated for aboveground use, where rigid connections are impractical

(4) Minimum 0.032 in. (0.081 cm) thick copper tubing no greater than 0.5-inch inner diameter that complies with ASTM B75/B75M, *Standard Specification for Seamless Copper Tube*; ASTM B88, *Standard Specification for Seamless Copper Water Tube;* or ASTM B280, *Standard Specification for Seamless Copper Tube for Air Conditioning and Refrigeration Field Service*

(5) Minimum 0.032 in. (0.081 cm) thick brass tubing that complies with ASTM B135/B135M, *Standard Specification for Seamless Brass Tube*

(6) Minimum 0.035 in. (0.089 cm) thick stainless steel tubing that complies with ASTM A254, *Standard Specification for Copper-Brazed Steel Tubing;* or ASTM A269/A269M, *Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service*

(7) Aboveground fuel supply piping systems listed to UL 180, *Standard for Combustible Liquid Tank Accessories*

(8) Aboveground fuel supply piping systems listed to UL 1369*, Aboveground Piping for Flammable and Combustible Liquids.*

26.4.1.2.2
For underground fuel supply lines and for copper fuel supply lines that are in direct contact with concrete or soil, only the following types and materials shall be permitted:

(1) Listed nonmetallic piping that complies with UL 971, *Standard for Nonmetallic Underground Piping for Flammable Liquids*

(2) Listed corrosion-resistant metallic piping that complies with UL 971A, *Outline of Investigation for Metallic Underground Fuel Pipe*

(3) Flexible metal piping listed to UL 2039, *Standard for Safety for Flexible Connector Piping for Fuels*, and rated for underground use, where rigid connections are impractical

26.4.2 Acceptable Fittings — Types and Materials.

26.4.2.1
Pipe fittings shall be malleable iron, steel, stainless steel, or brass with male or female thread types that comply with a recognized thread specification or be press-connect-type fittings listed to UL 180, *Standard for Combustible Liquid Tank Accessories*. Threads shall be of the type, size, and direction that match with the pipe end threads with which they connect and shall be made liquidtight with suitable pipe joint or sealing compounds. Press-connect fittings shall be installed in accordance with the manufacturer's specifications with a tool recommended by the manufacturer. [**31**:8.3.1]

26.4.2.2

Tubing fittings shall be of types suitable for metal-to-metal flare, press-connect fittings listed to UL 180, *Standard for Combustible Liquid Tank Accessories*, or engineered connections for the metals and thicknesses of the tubing with which they connect. They shall be of the type and size that match with the tube end, flare, engineered fitting, or press-connect end of tubing with which they connect. They shall be connected in accordance with the manufacturer's instructions. [**31**:8.3.2]

26.4.2.3

Fittings that are part of an engineered fuel piping system that is listed to UL 1369, *Aboveground Piping for Flammable and Combustible Liquids*, installed in accordance with manufacturer's instructions, and approved by the authority having jurisdiction

26.4.2.4
Welded or flanged connections shall be permitted.

26.4.2.5

Other fittings and connection types shall be permitted if they are part of an engineered system that is listed for use with liquid fuel and installed in accordance with the manufacturer's instructions. [**31**:8.3.3]

26.4.2.6
Cast iron fittings shall not be used. [**31**:8.3.4]

26.4.3 Piping System Design.

26.4.3.1
Piping systems shall be:

(1) Liquidtight

(2) Physically supported in accordance with recognized industry standards, codes, or manufacturer's installation instructions.

(3) Protected against physical damage

(4) Installed with seismic accommodation when required.

26.4.3.2
Allowances shall be made for expansion, contraction, jarring, and vibration of piping systems. [**31**:8.4.2]

26.4.3.2.1*
Where liquids capable of thermal expansion can be trapped in a piping section, pressure relief shall be provided.

A.26.4.3.2.1
Underground piping, piping installed in temperature-controlled locations, and piping containing liquids that are not capable of thermal expansion may not be subject to this requirement.

26.4.3.3
Piping systems made of combustible materials shall not be used inside of buildings or aboveground outside of buildings unless listed with at least a 30-minute fire rating, in accordance with UL 180, *Standard for Combustible Liquid Tank Accessories* or UL 1369, *Aboveground Piping for Flammable and Combustible Liquids* [**30**:8.4.3]

26.4.3.4
Piping systems for underground tanks shall be provided with accommodation for ground movement without impairing the tightness of the piping system.

26.4.3.5
All connections to an underground tank shall be made through the top of the tank. [**31**:8.4.5]

26.4.3.6
Fuel shall not be transferred through piping to appliances by pressurization of the tank. [**31**:8.4.6]

26.4.3.7
Each tank or tank system shall be equipped with separate fill and vent pipes, both of which shall terminate aboveground outside the building, except as permitted for cross-connected tanks in 26.4.8.

26.4.3.7.1
The fill pipe for each tank shall be provided on an exterior wall of the room or structure enclosing the tank at a point at least 600 mm (24 in.) from any building opening at the same or lower level. [**37**:6.6.3.3]

26.4.3.7.2 Tanks shall be filled in a manner that prevents spills when the filing hose is disconnected.

26.4.3.7.3

A fill pipe terminating in accordance with 26.4.3.7.1 shall not be required for tanks that are filled manually at the fill connection on the tank, provided that the tank and its fill connection are located within the spill containment required by 26.4.3.7.3 and the filling operation is constantly attended. [**37**:6.6.3.4]

26.4.3.7.4

Each tank room shall be provided with spill containment consisting of either a wall, a curb, or a dike having a capacity at least equal to that of the largest tank.

Exception No. 1: A spill containment system of lesser capacity equipped with an overflow or drainage system that is adequate in size and location to convey any spillage of fuel to a tank (inside or outside) or to a safe area outside the structure.

Exception No. 2: Listed or approved secondary containment tanks shall be considered as meeting this requirement provided piping between fuel tank(s) and engine(s) is double-wall and protected from physical damage. [**37**:6.3.6.3]

26.4.4 Tank Fill Piping.

26.4.4.1
The fill pipe as permitted in 26.4.1.1 connected to the tank shall be large enough and so located as to permit ready filling in a manner that minimizes spills. The fill pipe shall also be:

(1) At least 1¼ in. (30 mm) nominal pipe size

(2) Pitched toward the tank

(3) Protected from physical damage

(4) Without sags or traps where liquid can collect [**31**:8.5.1]

26.4.4.2
The end of an aboveground fill pipe shall be secured with a metal cover designed to prevent the entry of water and shall be identified as a fuel fill opening.

26.4.5 Tank Vent Piping.

26.4.5.1
Vent piping connected to a tank as permitted in 26.4.1.1 shall be large enough and so located as to permit adequate normal fill and emergency venting. The vent pipe shall also be:

(1) Sized for the tank capacity in accordance with Table 26.3.1.5.1 or as required by the listing or manufacturer.

(2) Pitched toward the tank

(3) Protected from physical damage

(4) Without sags or traps where liquid can collect

(5) Without obstructions other than an audible alarm at the tank opening or a cable operated tank gauge that does not restrict the vent. [**31**:8.6.1]

26.4.5.2
~~All vent pipes shall terminate outside of buildings at a point not less than 2 ft (0.6 m) from any building opening. [**31**:8.6.2]~~ See NFPA 30 Chapter 27 for vent pipe termination point placement.

26.4.5.2.1 Indoor venting shall only be allowed if approved.

26.4.5.2.2 Vent outlets shall be located so that vapors will not be trapped by eaves or other obstructions.

26.4.5.2.3*
Vent pipes shall terminate in a manner to avoid being obstructed by snow, ice, and water.

A.26.4.5.2.3 This protection is often accomplished by installing the vent termination above known flood and snowfall levels.

26.4.5.2.4
Vent pipes shall terminate ~~not more than 12 ft (3.6 m) from the fill pipe and at a point visible from the fill point. [**31**:8.6.2.2]~~per NFPA 30 Chapter 27.

26.4.5.2.~~3~~5

The requirements of 26.4.5.2.3 shall not be required if:

(1) a gauge is located within sight of the operator and,

(2) a high-level alarm is used that can be heard by the operator.

26.4.5.3
The vent pipe shall terminate in a corrosion-resistant weatherproof vent cap. [**31**:8.6.3]

26.4.5.4
Vent caps shall have a minimum free open area equal to the cross-sectional area of the vent pipe and shall have screens No. 4 mesh or coarser. [**31**:8.6.4]

26.4.6 Fuel Supply Piping and Return Piping.
26.4.6.1
The fuel supply piping between the supply tank and the appliance shall be:

(1) At least nominal ⅜ in. (10 mm) pipe or tubing

(2) Large enough to meet the fuel consumption rate of the appliance

(3) Provided with a shutoff valve at the outlet, for an aboveground tank

(4) Provided with ~~a~~an accessible shutoff valve inside the building in close proximity to where the fuel line enters a building [**31**:8.7.1]

(5)* Provided with an Automatic Safety Shutoff Valve ~~fusible link safety~~ (ASSV) ~~valve~~ inside the room where the fuel line is connected to the appliance. ~~where an oil line enters the building~~

A.26.4.6.1(5) The fusible link safety shutoff valve can include the shutoff valve function required in 26.4.6.1(4).

26.4.6.2*
The fuel supply piping from the supply tank shall be connected to the top of the tank, except in the following cases:

(1) Tanks of 330 gal (1250 L) or less

(2) Tanks with cross-connections [**31**:8.7.2]

A. 26.4.6.2
Connecting fuel supply piping to the top of all supply tanks (top-draw connection) can increase the risk of water accumulation within the tank. If water is left in the tank, it could be at risk of premature failure due to internal corrosion. It is, therefore, recommended to properly maintain a top-draw tank by sloping the tank in accordance with 26.3.4.8(1) and 26.3.7.6 and adhering to the manufacturer's instructions for installation and maintenance. As a best practice for tank maintenance, the lowest point of the tank should be inspected for presence of water accumulation at least once per year and all water removed as soon as detected. [**31**:A.8.7.2]

26.4.6.3
An ASSV ~~readily accessible fusible link safety shutoff valve~~ shall be installed:

(1) As close as practical to the ~~burner(s) supply connection~~connected appliance

~~(2) Immediately~~ Inside the building immediately upstream of the filter ~~and inside the building~~, ~~if the piping passes through a foundation [**31**:8.7.3]~~

26.4.6.4
The pressure at the fuel supply inlet to appliance shall not exceed a gauge pressure of 3 psi (gauge pressure of 21 kPa) unless the appliance is approved for a higher inlet pressure. [**31**:8.7.4]

26.4.6.5
Threaded pipe or valve ends installed in a tank bottom opening for gravity feed shall not penetrate above the bottom of the tank shell. [**31**:8.7.5]

26.4.6.5.1
Use of stem pieces or other modifications to valves shall not circumvent the requirement of 26.4.6.5 to prevent water in the tank from draining out of the bottom opening. [**31**:8.7.5.1]

26.4.6.6
Unions or fittings that require gaskets or packings used in fuel lines shall be listed to UL 180, *Standard for Combustible Liquid Tank Accessories*. [**31**:8.7.6]

26.4.6.7 Fuel Return Piping.

A return line from the appliance back to a supply tank shall have no valves or obstructions except for a hard-seat or ball valve that shall be left in the open position, with the handle removed, and shall enter the top of the same tank. [**31**:8.7.7]

26.4.7 Auxiliary Tank Piping.
26.4.7.1
An auxiliary tank shall be provided with an overflow pipe draining to the supply tank and extending into the top of the supply tank, unless the auxiliary tank is specifically listed for use without an overflow pipe. [**31**:8.8.1]

26.4.7.1.1 If a gravity flow from the auxiliary tank to the supply tank is not possible, a return pump, automatically actuated at no higher than 95% of the auxiliary tank's capacity, shall be permitted to be used.

26.4.7.2
An overflow pipe from an auxiliary tank shall have no valves or obstructions except for a hard-seat or ball valve that shall be left in the open position, with the handle removed, and shall enter the top of the same tank.

26.4.8 Piping for Cross-Connected Tanks.

26.4.8.1 Cross connected tanks shall all be of the same size and shape and installed at the same elevations to prevent overfilling.

26.4.8.1.1 Tanks of different capacities shall be permitted provided that the top and bottom elevations are the same for all connected tanks.

26.4.8.2
Cross-connection of two tanks of not more than 660 gal (2500 L) aggregate capacity shall be permitted if piped in accordance with Figure 26.4.8.2. [**31**:8.9.1]

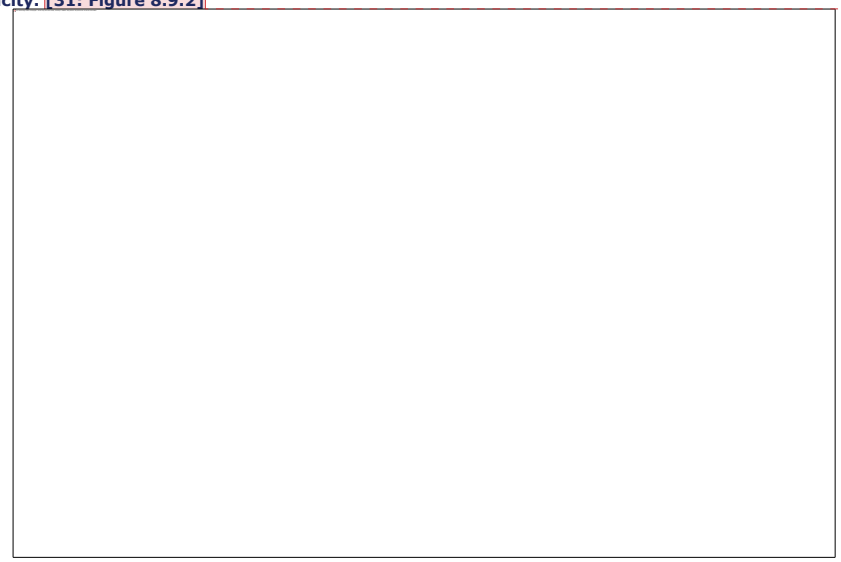
Figure 26.4.8.2 Cross-Connection of Two Fuel Tanks of Not More Than 660 gal (2500 L) Aggregate Capacity. [31: Figure 8.9.1]

26.4.8.3

Commented [MM2]: On behalf of the submitter: Figures to be updated once requirements are agreed upon.

Cross-connection of three tanks of not more than 990 gal (3750 L) aggregate capacity to the same appliance shall be permitted if piped in accordance with Figure 26.4.8.3. [**31**:8.9.2]

Figure 26.4.8.3 Cross-Connection of Three Fuel Tanks of Not More Than 990 gal (3750 L) Aggregate Capacity. [31: Figure 8.9.2]



Commented [MM3]: On behalf of the submitter: Figures to be updated once requirements are agreed upon.

26.4.8.4
Cross-connection of four tanks of not more than 1320 gal (5000 L) aggregate capacity to the appliance shall be permitted if piped in accordance with Figure 26.4.8.4. [**31**:8.9.3]

Figure 26.4.8.4 Cross-Connection of Four Fuel Tanks of Not More Than 1320 gal (5000 L) Aggregate Capacity. [31: Figure 8.9.3]

Commented [MM4]: On behalf of the submitter: Figures to be updated once requirements are agreed upon.

26.4.8.5
Cross-connection of multiple tanks to the same appliance or to the same group of appliances using single fill and vent pipes shall be permitted in accordance with 26.4.8.2, 26.4.8.3, or 26.4.8.4, provided the tanks are rigidly secured to a common slab or foundation. [**31**:8.9.4]

26.4.8.6
All fill and vent pipes shall drain toward the tank. [**31**:8.9.5]

26.4.8.7
Vent pipes from more than one tank shall be permitted to be manifolded and connected into one outlet pipe. [**31**:8.9.6]

26.4.8.7.1
The outlet pipe shall be at least one pipe size larger than the largest individual vent pipe as specified in Table 26.3.1.5.1 or as required by the listing of the tank and the manufacturer's instructions.
26.4.8.7.2
In no case shall the point of connection between two or more vent pipes be lower than the top of the fill pipe opening located on the tank. [**31**:8.9.6.2]

26.4.8.7.3 Emergency vents shall be sized and installed in accordance with 27.8.1.6.

26.4.9 Pumps, Valves, Gauges, and Appurtenances.

26.4.9.1
Tanks, including each compartment of multi-compartment tanks shall be equipped with a method of determining the fuel level. [**31**:8.10.1]

26.4.9.2
Gauges for indicating the oil level in tank(s) shall be listed in accordance with UL 180, *Standard for Combustible Liquid Tank Accessories*. They shall be installed in accordance with manufacturers' instructions and so that fuel or vapor will not be discharged into the building. [**31**:8.10.2]

26.4.9.3
Except as provided for in 26.4.9.3.1 and 26.4.9.3.2, supply tanks provided with fill and vent pipes shall be provided with a device to indicate either visually or audibly and within 12 ft (3.5 m) of the fill point, as specified by 26.4.5.2.3, when the fuel in the tank has reached a predetermined safe level. [**31**:8.10.3]

26.4.9.3.1
Aboveground tanks that do not exceed 330 gal (1250 L) capacity shall rely on only an audible fill alarm to determine safe fill levels. [**31**:8.10.3.1]

26.4.9.4
Supply tanks shall not be equipped with a sight gauge. [**31**:8.10.4]

26.4.9.5
An automatic pump that is not an integral part of an appliance shall be listed or otherwise approved for use with fuel oil and installed in full compliance with its listing if listed, and the manufacturer's requirements.

26.4.9.6 Fusible Link Safety Shutoff Valve or ASSV.

26.4.9.6.1
A readily accessible fusible link safety shutoff valve or ASSV that closes against the supply pressure shall be installed at each of the following points, except as provided in 26.4.9.6.2:

(1) As close as practical to the filter on the tank side of the filter

(2) As close as practical to the inlet connection to the appliance [**31**:8.10.6.1]

(3) Where the supply pipe enters the building unless prohibited by other standards

26.4.9.6.2
Where the filter and inlet connection to appliance are within 18 in. (457 mm) of each other, only one fusible link safety shutoff valve shall be required to be installed on the tank side of the filter. [**31**:8.10.6.2]

26.4.10 Testing of Fuel Supply and Return Piping.

26.4.10.1

Testing shall be conducted per NFPA 30 Chapter 27.

26.4.10.2
Before oil supply lines are tested for leaks, any supply tank and any appliances shall be isolated from pressure, unless rated for the applicable test pressure or vacuum. [**31**:8.11.2]

26.4.10.3
Gauges used for leak testing shall be suitable for the test type, shall be in working order, and shall be calibrated. Gauges shall have a test range of not more than twice the test pressure and shall indicate in increments of not more than 1.0 psi (7 kPa) or 1.0 in. Hg (25 mm Hg). [**31**:8.11.5]

Public Comment No. 21-NFPA 30-2022 [Section No. 21.7.1.5.1]

21.7.1.5.1

Other methods of overfill protection shall be permitted as approved by the authority having jurisdiction.

Additional Proposed Changes

File Name	Description	Approved
30_A2023_FLC_AAC_CCN_7.pdf	30_A2023_FLC_AAC_CCN_7	

Statement of Problem and Substantiation for Public Comment

NOTE: The following CC Note No. 7 appeared in the First Draft Report.

Related Item

• CCN-7

Submitter Information Verification

Submitter Full Name: CC on FLC-AAC
Organization: NFPA
Street Address:
City:
State:
Zip:
Submittal Date: Thu May 05 12:46:55 EDT 2022
Committee: FLC-TAN

Committee Statement

Committee Action: Rejected

Resolution: The task group is not recommending mandating overfill requirements on bulk storage tanks containing Class I Liquids beyond what is in API 2350 for several reasons. The CSB refers to the Buncefield incident in their presentation as an example of a catastrophic failure. The Buncefield facility had all the safety hardware recommended by the CSB and NFPA 30. However, it was human error that defeated the hardware that the CSB is recommending. The CSB review of the CAPECO incident shows that the owner/operator was not following existing requirements that are in NFPA 30 and API 2350 and had been cited repeatedly for these failures. Adding requirements onto the existing requirements in NFPA 30 and API 2350 is not expected to address these types of incidents. Both NFPA 30 and API 2350 already provide sufficient requirements and/or guidance on tailoring tank overfill protections measures for each situation. If these requirements are followed, they will adequately safeguard tanks from overfilling. NFPA and API routinely review input on the revision of their documents. The committee handling API 2350 took into consideration CSB recommendations to ensure that the best approaches and technology available is included in this latest revision. The owner/operators of the terminal facilities work extensively to prevent overfills and this

expertise has been incorporated into API 2350. Also, mandating overfill requirements often may result in unintended consequences for owners/operators.

Correlating Committee Note No. 7-NFPA 30-2022 [Section No. 21.7.1.5.1]

Supplemental Information

File Name	Description	Approved
Open_CSB_Recs_to_NFPA_30_1-13-2022_.pdf		✓
21-12_Letter_from_CSB.pdf		✓

Submitter Information Verification

Committee: FLC-AAC
Submittal Date: Fri Jan 14 12:31:04 EST 2022

Committee Statement and Meeting Notes

Committee Statement: The FLC-TAN TC is requested to review the CSB recommendation No. 2010-2-I-PR-R6 for overfill protection at bulk storage tanks. A task group convened to address overfill protection requirements after the First Draft meeting and has provided findings to be presented to the FLC-TAN technical committee. The committee is asked to review the CSB recommendation and associated background materials to determine

1. Does the existing work cover what the recommendation is asking for?

2. If no, can modifications be made to meet the recommendation?

3. Provide an explanation of 1 and 2.

It is the FLC-AAC committee's intent to resolve all CSB recommendations where possible.

Ballot Results

✔ **This item has passed ballot**

14 Eligible Voters
2 Not Returned
12 Affirmative All
0 Affirmative with Comments
0 Negative with Comments
0 Abstention

Not Returned

Cosey, William V. F.

Woycheese, John P.

Affirmative All

Bellamy, Tracey D.

Blackford, Tim D.

Denhardt, John August

Fisher, Douglas W.

Johns, P.E., Bill

LeBlanc, John A.

Lebowitz, Jeremy

Matthews, Bryan Edwin

Nugent, David P.

Old, Leo T.

Riegel, Roland A.

Wright, Scott

U.S. Chemical Safety and Hazard Investigation Board

Discussion of CSB Open Recommendations Pertaining to NFPA 30

CSB Recommendation No. 2011-1-H-XX-R6
and
CSB Recommendation No. 2010-2-I-PR-R6

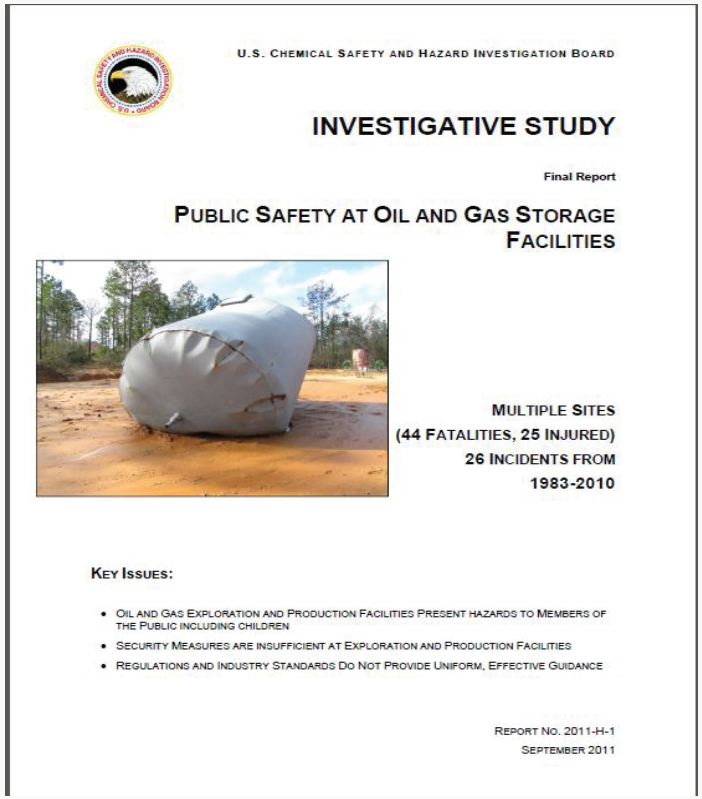
Presented to:

NFPA 30 Correlating Committee

January 13, 2022

Oil Tank Safety Study

- CSB Hazard Study
- Three Incidents (2010)
  - MS, OK, TX
- 26 incidents (1983-2010)
  - 44 deaths, 26 injuries
- Oil & Gas Production
- Inadequate Warnings & Security
- No Uniform, Effective Guidance



U.S. CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD

INVESTIGATIVE STUDY

Final Report

PUBLIC SAFETY AT OIL AND GAS STORAGE FACILITIES

MULTIPLE SITES
(44 FATALITIES, 25 INJURED)
26 INCIDENTS FROM
1983-2010

KEY ISSUES:

- OIL AND GAS EXPLORATION AND PRODUCTION FACILITIES PRESENT HAZARDS TO MEMBERS OF THE PUBLIC INCLUDING CHILDREN
- SECURITY MEASURES ARE INSUFFICIENT AT EXPLORATION AND PRODUCTION FACILITIES
- REGULATIONS AND INDUSTRY STANDARDS DO NOT PROVIDE UNIFORM, EFFECTIVE GUIDANCE

REPORT NO. 2011-H-1
SEPTEMBER 2011

https://www.csb.gov/oil-site-safety/

CSB Recommendation

Amend NFPA 30, "Storage of Liquids in Tanks—Requirements for all Storage Tanks" as follows:

a) Remove the term "isolated" from the current wording of the standard and replace it with a more descriptive term, such as "normally unoccupied"

b) Remove the words "Where necessary" from Security for Unsupervised Storage Tanks, Chapter 21.7.2.2

c) Add a reference to a relevant security standard that offers specifications on fencing, locks and other site security measures

d) Add a definition of security encompassing requirements such as fencing, locked gates, hatch locks, and barriers

NFPA 30-2015 Change

21.7.2.2* Security for Unsupervised Storage Tanks. Unsupervised, isolated aboveground storage tanks shall be secured and shall be marked to identify the fire hazards of the tank and the tank's contents to the general public. Where necessary to protect the tank from tampering or trespassing, the area where the tank is located shall be secured.

A.21.7.2.2 Protection from tampering or trespassing might include one or more of the following: appropriate fencing around isolated tanks in remote areas; "No Trespassing" signs; warning signs indicating the fire hazard of the tank or its contents; locked or secured access to stairways and ladders; locked or secured hatches, valves, and so forth.

CSB Follow-up Actions

- 8 June 2017 e-mail; 20 October 2017 conference call; 3 August 2021 letter
- No changes made in either the 2018 or 2021 versions of NFPA 30
- CSB Issues:
  - Many E&P tanks needing warnings and security protection are not “isolated”
  - No security standard mentioned
    - Section 610 to Annex G to NFPA 730 (fences & locks)

Recent Developments

- Recently published research which shows how close people are living to oil well tanks (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5783652/)
- Addendum 1 to Standard 12Rl, *Standard for Setting, Maintenance, Inspection. Operation, and Repair of Tanks in Production Service,* Sixth Edition (published 3-1-2020, addendum 1 published 6-2021)
- March 2021, EPA *Oil and Gas Safety Alert: Public Safety at Oil and Gas Upstream Facilities* (https://www.epa.gov/rmp/oil-and-gas-safety-alert-public-safety-oil-and-gas-upstream-facilities)
- Incidents continue to occur at E&P storage tank batteries (https://www.theadvocate.com/baton_rouge/news/article_38fb4798-df74-11eb9fec2b2282381f3a.amp.html?utm_medium=nondesktop&utm_source=push&utm_campaign=tecnaviaapp&utm_content=&utm_term=)
- New State of Louisiana tank battery security requirements

Other Board Actions on OTSS Recommendations

- CSB Board closed recommendations to API and EPA as "Closed –Acceptable Action" based on their responses
- CSB Board voted to close recommendations issued to states of Mississippi and Texas as: "Closed – Unacceptable Action/No response received" based on their lack of response
- CSB Board voted to change the status of recommendation to Oklahoma as: "Open– Unacceptable Response" based on their efforts to date

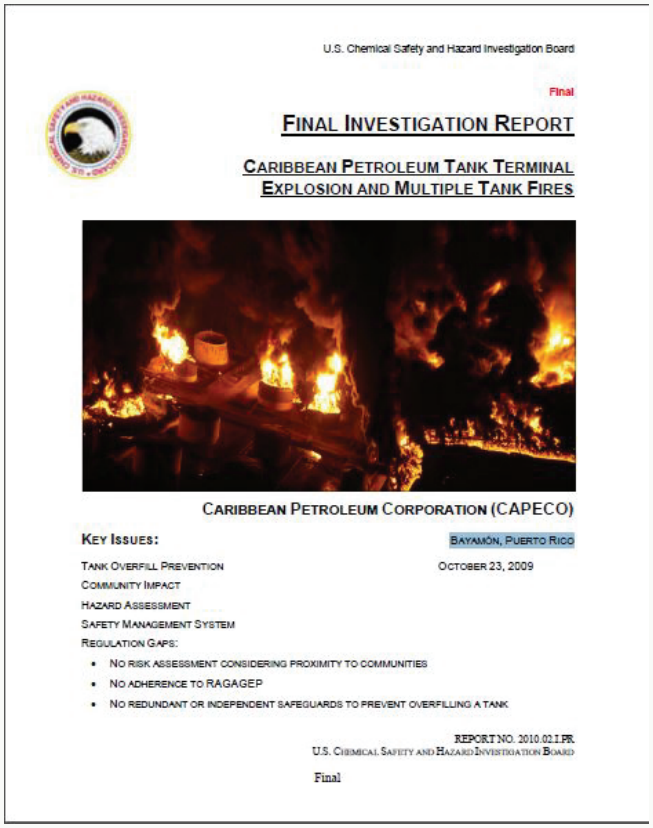
What CSB Wants NFPA 30 to Do

Make appropriate changes to the requirements in NFPA 30 so that it aligns with Addendum 1 to API Standard 12Rl and the EPA *Oil and Gas Safety Alert: Public Safety at Oil and Gas Upstream Facilities*

CSB Goal: Uniform and Effective Guidance for E&P upstream facilities regrading warnings and security requirements

CAPECO Tank Explosion

- CSB Investigation Report
- Single Incident (2009)
  - Bayamon, Puerto Rico
  - Vapor Cloud Explosion
  - 300 homes/businesses damaged
- Petroleum Tank Terminal
- Lack of overfill protection and redundancy of controls



U.S. Chemical Safety and Hazard Investigation Board

Final

FINAL INVESTIGATION REPORT

CARIBBEAN PETROLEUM TANK TERMINAL EXPLOSION AND MULTIPLE TANK FIRES

CARIBBEAN PETROLEUM CORPORATION (CAPECO)

KEY ISSUES:

TANK OVERFILL PREVENTION
COMMUNITY IMPACT
HAZARD ASSESSMENT
SAFETY MANAGEMENT SYSTEM
REGULATION GAPS:

- NO RISK ASSESSMENT CONSIDERING PROXIMITY TO COMMUNITIES
- NO ADHERENCE TO RAGAGEP
- NO REDUNDANT OR INDEPENDENT SAFEGUARDS TO PREVENT OVERFILLING A TANK

BAYAMÓN, PUERTO RICO

OCTOBER 23, 2009

REPORT NO. 2010-02-I-PR
U.S. CHEMICAL SAFETY AND HAZARD INVESTIGATION BOARD

Final

https://www.csb.gov/caribbean-petroleum-refining-tank-explosion-and-fire/

CSB Recommendation

Revise NFPA 30, Storage of Flammable and Combustible Liquids, Section 21.7.1.1 (2015) for bulk aboveground storage tank terminals storing gasoline, jet fuel, other fuel mixtures or blendstocks, and other flammable liquids having an NFPA 704 flammability rating of 3 or greater. This modification shall meet the following requirements:

a. More than one safeguard to prevent a tank overfill, all within an automatic overfill prevention system as described in ANSI/API Standard 2350 (2015) Overfill Protection for Storage Tanks in Petroleum Facilities with an independent level alarm as one of the safeguards. The safeguards should meet the following standards:

1. Separated physically and electronically and independent from the tank gauging system;

2. Engineered, operated, and maintained for an appropriate level of safety based on the predetermined risk level after considering part b of this recommendation; and

3. Proof tested with sufficient frequency in accordance with the validated arrangements and procedures.

b. Specified to achieve the necessary risk reduction as determined by a documented risk assessment methodology conducted in accordance with Center for Chemical Process Safety Guidelines for Hazard Evaluation Procedures, 3rd Edition, accounting for the following factors:

1. The existence of nearby populations and contamination of nearby environmental resources;

2. The nature and intensity of facility operations;

3. Realistic reliability for the tank gauging system; and

4. The extent/rigor of operator monitoring.

c. Ensure that the above changes not subject to grandfathering provisions in the code.

NFPA 30, Section 21.7

21.7 Operation of Storage Tanks.

21.7.1* Prevention of Overfilling of Storage Tanks. Facilities with aboveground tanks larger than 1320 gal (5000 L) storing Class I or Class II liquids shall establish procedures or shall provide equipment, or both, to prevent overfilling of tanks.

21.7.1.1 Facilities with aboveground tanks that receive and transfer Class I liquids from mainline pipelines or marine vessels shall establish and follow formal written procedures to prevent overfilling of tanks utilizing one of the following methods of protection:

(1) Tanks shall be gauged at intervals in accordance with established procedures by personnel continuously on the premises during product receipt. Acknowledged communication shall be maintained with the supplier so flow can be shut down or diverted in accordance with established procedures.

(2) Tanks shall be equipped with a high-level detection device that is either independent of any gauging equipment or incorporates a gauging and alarm system that provides electronic self-checking to indicate when the gauging and alarm system has failed. Alarms shall be located where personnel who are on duty throughout product transfer can arrange for flow stoppage or diversion in accordance with established procedures.

(3) Tanks shall be equipped with an independent high-level detection system that will automatically shut down or divert flow in accordance with established procedures.

NFPA TC Position

- Given the fact that these provisions are applicable to a wide range of tank capacities, starting at 1320 gal. and greater, the NFPA 30 Technical Committee on Tank Storage and Piping Systems has determined that manual gauging must be retained as a valid option for the smaller tanks
- API Standard 2350, *Overfill Protection for Storage Tanks in Petroleum Facilities*, is directly referenced as the source for specific guidance on overfill prevention systems. That document delves into the subject in far more detail than can NFPA 30. Whether or not to provide redundant systems should be determined by a risk evaluation, not a minimum code such as NFPA30
- The Technical Committee notes that the specific provisions recommended by the Board are more suited to inclusion in API Standard 2350. The Technical Committee also notes that the risk assessment recommended by the Board is already required by Chapter 6 of the Code.

CSB Position

- The regulatory analysis and Appendix B from the CAPECO report demonstrate a history of catastrophic fires and explosions for large storage tanks containing flammable materials that meet a certain criteria
- After the Buncefield explosion, the UK took measures to address the issue of overfilling and redundant systems
- CSB issued several parallel recommendations
  - OSHA to update 1910.106
  - EPA to upgrade either SPCC or RMP
  - API to upgrade API Standard 2350
  - ICC to upgrade the IFC
- NFPA 30 is more widely adopted than API

Response to CSB CAPECO Recommendations to Date

- OSHA has no plans to update 1901.106 at this time (codified the 1968 edition of NFPA 30)
- EPA is considering changes to RMP; SPCC is driven by consensus standards (e.g., API, NFPA, ICC)
- API has updated API 2350 to incorporate redundancy and requires a risk assessment, but does still does not require overfill protection for the tanks
- NFPA and ICC have taken no action to date

Issues to Be Considered

Note the terminology used in the recommendation: *bulk aboveground storage tank terminals storing gasoline, jet fuel, other fuel mixtures or blendstocks, and other flammable liquids having an NFPA 704 flammability rating of 3 or greater*

- Not all aboveground tanks are covered
- Coverage limited to tank terminals
- Bulk (i.e., capable of VC release/explosion)
  - CAPECO (600 MT); Buncefield (300 MT); Jaipur (1000 MT)
  - https://doi.org/10.1016/j.pecs.2019.100804
- NFPA 704 rating: Class I, IB & IC liquids

What CSB Wants NFPA 30 to Do

Figure out a way to change the language of NFPA 30 so that the specified storage tanks outlined in the CSB Recommendation require more than one safeguard to prevent a tank overfill and that the system has sufficient redundancy to prevent further catastrophic incidents

U.S. Chemical Safety and Hazard Investigation Board

1750 Pennsylvania Avenue NW, Suite 910 | Washington, DC 20006
Phone: (202) 261-7621 | Fax: (202) 261-7650
www.csb.gov

Office of Recommendations

November 23, 2021

Christian Dubay
Vice President, Codes and Standards
National Fire Protection Association
1 Batterymarch Park
Quincy, MA 02169-7471

Dear Mr. Dubay:

The U.S. Chemical Safety and Hazard Investigation Board (CSB) issues safety recommendations that stem from incident and hazard investigations. These are the CSB's principle tool for driving chemical safety change. In a continuing effort to encourage positive implementation action as well as ensure open communication and awareness, I am providing you with a list of the National Fire Protection Association's (NFPA) open recommendations as well as the most recent action.

If you have any questions, please don't hesitate to contact me or my staff at the phone number and address above.

Sincerely,

Charles B. Barbee
Director of Recommendations

Enclosure

cc: Mark Kaszniak, Senior Recommendations Specialist, CSB

Recommendation Number	Investigation	Recommendation Status	Date Issued: Last Status Update	Recommendation Text
2011-I-H-XX-R6	Oil Site Safety Study	Open – Awaiting Response or Evaluation/Approval of Response	Issued: 9/30/2011 Board Action: **None to date** The 2021 edition of NFPA 30 did not fully address the CSB recommendation, CSB sent a follow-up letter to NFPA dated 8-3-2021 outlining what changes need to be made for a acceptable closure.	Amend NFPA 30, "Storage of Liquids in Tanks - Requirements for all Storage Tanks" as follows: a) Remove the term "isolated" from the current wording of the standard and replace it with a more descriptive term, such as "normally unoccupied;" b) Remove the words "Where necessary" from Security for Unsupervised Storage Tanks. Chapter 21.7.2.2.; c) Add a reference to a relevant security standard that offers specifications on fencing, locks and other site security measures; and d) Add a definition of security encompassing requirements such as fencing, locked gates, hatch locks, and barriers.
2011-6-I-HI-R7	Donaldson Enterprises, Inc. Fatal Fireworks Disassembly Explosion and Fire	Open—Acceptable Response or Alternate Response	Issued: 1/17/2013 Board Action: 4/24/2017 Draft NFPA 401 issued, public input being accepted until 1/5/2022. CSB is reviewing draft and will submit comments. Final standard likely to be adopted in Fall 2023.	Develop a new standard, or incorporate within an existing standard, best practices for the safe disposal of waste fireworks that are consistent with environmental requirements. At a minimum, this guidance or standard should: • Discourage the disassembly of waste fireworks as a step in the disposal process; • Minimize the accumulation of waste explosive materials, and encourage practices that reduce, recycle, reuse, or repurpose fireworks; and • Incorporate input from ATF, EPA, and other agencies, experts, and available resources on fireworks disposal methodologies.
2011-6-I-HI-R8	Donaldson Enterprises, Inc. Fatal Fireworks Disassembly Explosion and Fire	Open - Awaiting Response or Evaluation/Approval of Response	Issued: 1/17/2013 Board Action: **None to date** Contingent upon successful completion of R7 above	Once fireworks disposal best practices under recommendation 2011-06-I-HI-R7 is completed, develop and implement an outreach plan to promptly communicate the new NFPA practices to relevant government agencies and private entities that dispose of waste fireworks.

Open Recommendations

Recommendation Number	Investigation	Recommendation Status	Date Issued: Last Status Update	Recommendation Text
2010-2-I-PR-R6	Caribbean Petroleum Refining Tank Explosion and Fire	Open - Awaiting Response or Evaluation/Approval of Response	Issued: 10/21/2015 Board Action: **None to date** The 2021 edition of NFPA 30 did not address the CSB recommendation, CSB will submit public input to the Technical Committee to urge adoption of the CSB recommendation in a future revision.	Revise NFPA 30, Storage of Flammable and Combustible Liquids, Section 21.7.1.1 (2015) for bulk aboveground storage tank terminals storing gasoline, jet fuel, other fuel mixtures or blendstocks, and other flammable liquids having an NFPA 704 flammability rating of 3 or greater. This modification shall meet the following requirements: a. More than one safeguard to prevent a tank overfill, all within an automatic overfill prevention system as described in ANSI/API Standard 2350 (2015) Overfill Protection for Storage Tanks in Petroleum Facilities with an independent level alarm as one of the safeguards. The safeguards should meet the following standards: 1. Separated physically and electronically and independent from the tank gauging system; 2. Engineered, operated, and maintained for an appropriate level of safety based on the predetermined risk level after considering part b of this recommendation; and 3. Proof tested with sufficient frequency in accordance with the validated arrangements and procedures. b. Specified to achieve the necessary risk reduction as determined by a documented risk assessment methodology conducted in accordance with Center for Chemical Process Safety Guidelines for Hazard Evaluation Procedures, 3rd Edition, accounting for the following factors: 1. The existence of nearby populations and contamination of nearby environmental resources; 2. The nature and intensity of facility operations; 3. Realistic reliability for the tank gauging system; and 4. The extent/rigor of operator monitoring. c. Ensure that the above changes not subject to grandfathering provisions in the code.

Public Comment No. 80-NFPA 30-2022 [Section No. 24.9.1]

24.9.1

~~Drainage systems shall be designed to minimize fire exposure to other tanks and adjacent properties or waterways. Compliance with with 24.9.2 through through 24.9.6 shall shall be deemed as meeting the requirements of of 24.9.1 .~~ Containment and Drainage Systems shall be designed to minimize risks as required by Section 6.12 including fire exposure to other tanks.

Statement of Problem and Substantiation for Public Comment

This change is correlating requirements within NFPA 30, new Section 6.12, the proposed general requirements section.

Related Public Comments for This Document

Related Comment	Relationship
Public Comment No. 53-NFPA 30-2022 [New Section after 6.11.3.5]	

Related Item

• Public Input No. 141-NFPA 30-2021 [24.9] Related C.I. No. 501-NFPA 30-2021 [24.9.1]

Submitter Information Verification

Submitter Full Name:	Dwight Havens
Organization:	Round Lake Fire Department
Affiliation:	NFPA 30 Task Group on Containment, Drainage, and Spill Control
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Tue May 31 15:51:09 EDT 2022
Committee:	FLC-TAN

Committee Statement

Committee Action:	Rejected but see related SR
Resolution:	SR-469-NFPA 30-2022
Statement:	NFPA 30 applies to a broad range of occupancies and facilities which vary in size from the "mom and pop" mercantile occupancies to large industrial complexes. Users need clear guidance as to when these requirements apply and are asking for better information on how to meet the requirements when applicable. Containment, drainage, and spill control are methods of fire risk mitigation. Section 6.12 includes the common requirements in NFPA 30 which are used in the

occupancy specific chapters and allows any occupancy specific requirements to remain in the containment, drainage, and spill control sections of chapters 9, 10, 12, 13, 15, 16, 17, 18, and 24.This section also aligns drainage, containment, and spill control requirements in NFPA 30 with those found in NFPA 400 Hazardous Materials Code, and NFPA 5000 Building Construction and Safety Code, where deemed appropriate. Some requirements from 24.9 were moved to 6.12 as part of this consolidation of requirements. (See SR-470).

The technical changes were only intended to be limited to using MAQs as a trigger for providing containment, drainage, and spill control. This is to clarify confusion regarding users as to when these requirements are applicable. Also, the 10-gallon container threshold for implementing containment requirements was removed as it was deemed as excessive. Instead, the Technical Committee preferred to implement the analogous requirements in NFPA 400 for a 55-gallon threshold to implement spill containment requirements.

Public Comment No. 81-NFPA 30-2022 [Section No. 24.9.2]

24.9.2

~~The facility shall be designed and operated to prevent the discharge of liquids to public waterways, public sewers, or adjoining property under normal operating conditions.~~

Where spill control is required by section 6.12.2, it shall comply with the requirements of 6.12.2.1 through 6.12.2.3 and any additional requirements of this section.

Statement of Problem and Substantiation for Public Comment

This change is correlating requirements within NFPA 30, new Section 6.12, the proposed general requirements section.

Related Public Comments for This Document

Related Comment	Relationship
Public Comment No. 53-NFPA 30-2022 [New Section after 6.11.3.5]	

Related Item

• Public Input No. 141-NFPA 30-2021 [24.9] Related C.I. No. 501-NFPA 30-2021 [24.9.1]

Submitter Information Verification

Submitter Full Name:	Dwight Havens
Organization:	Round Lake Fire Department
Affiliation:	NFPA 30 Task Group on Containment, Drainage, and Spill Control
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Tue May 31 15:54:48 EDT 2022
Committee:	FLC-TAN

Committee Statement

Committee Action:	Rejected but see related SR
Resolution:	SR-469-NFPA 30-2022
Statement:	NFPA 30 applies to a broad range of occupancies and facilities which vary in size from the "mom and pop" mercantile occupancies to large industrial complexes. Users need clear guidance as to when these requirements apply and are asking for better information on how to meet the requirements when applicable. Containment, drainage, and spill control are methods of fire risk mitigation. Section 6.12 includes the common requirements in NFPA 30 which are used in the

occupancy specific chapters and allows any occupancy specific requirements to remain in the containment, drainage, and spill control sections of chapters 9, 10, 12, 13, 15, 16, 17, 18, and 24.This section also aligns drainage, containment, and spill control requirements in NFPA 30 with those found in NFPA 400 Hazardous Materials Code, and NFPA 5000 Building Construction and Safety Code, where deemed appropriate. Some requirements from 24.9 were moved to 6.12 as part of this consolidation of requirements. (See SR-470).

The technical changes were only intended to be limited to using MAQs as a trigger for providing containment, drainage, and spill control. This is to clarify confusion regarding users as to when these requirements are applicable. Also, the 10-gallon container threshold for implementing containment requirements was removed as it was deemed as excessive. Instead, the Technical Committee preferred to implement the analogous requirements in NFPA 400 for a 55-gallon threshold to implement spill containment requirements.

Public Comment No. 82-NFPA 30-2022 [Section No. 24.9.3]

24.9.3

~~Except for drains, solid floors shall be liquidtight and walls shall be liquidtight where they join the floor and for at least 4 in. (100 mm) above the floor.~~

Where containment is required by section 6.12.3.1, it shall comply with the requirements of 6.12.3.2 through 6.12.3.3, and any additional requirements of this section.

Statement of Problem and Substantiation for Public Comment

This change is correlating requirements within NFPA 30, new Section 6.12, the proposed general requirements section.

Related Public Comments for This Document

Related Comment	Relationship
Public Comment No. 53-NFPA 30-2022 [New Section after 6.11.3.5]	

Related Item

• Public Input No. 141-NFPA 30-2021 [24.9] Related C.I. No. 501-NFPA 30-2021 [24.9.1]

Submitter Information Verification

Submitter Full Name:	Dwight Havens
Organization:	Round Lake Fire Department
Affiliation:	NFPA 30 Task Group on Containment, Drainage, and Spill Control
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Tue May 31 15:57:15 EDT 2022
Committee:	FLC-TAN

Committee Statement

Committee Action:	Rejected but see related SR
Resolution:	SR-469-NFPA 30-2022
Statement:	NFPA 30 applies to a broad range of occupancies and facilities which vary in size from the "mom and pop" mercantile occupancies to large industrial complexes. Users need clear guidance as to when these requirements apply and are asking for better information on how to meet the requirements when applicable. Containment, drainage, and spill control are methods of fire risk mitigation. Section 6.12 includes the common requirements in NFPA 30 which are used in the

occupancy specific chapters and allows any occupancy specific requirements to remain in the containment, drainage, and spill control sections of chapters 9, 10, 12, 13, 15, 16, 17, 18, and 24.This section also aligns drainage, containment, and spill control requirements in NFPA 30 with those found in NFPA 400 Hazardous Materials Code, and NFPA 5000 Building Construction and Safety Code, where deemed appropriate. Some requirements from 24.9 were moved to 6.12 as part of this consolidation of requirements. (See SR-470).

The technical changes were only intended to be limited to using MAQs as a trigger for providing containment, drainage, and spill control. This is to clarify confusion regarding users as to when these requirements are applicable. Also, the 10-gallon container threshold for implementing containment requirements was removed as it was deemed as excessive. Instead, the Technical Committee preferred to implement the analogous requirements in NFPA 400 for a 55-gallon threshold to implement spill containment requirements.

Public Comment No. 83-NFPA 30-2022 [Section No. 24.9.4 [Excluding any Sub-Sections]]

~~Openings to adjacent rooms or buildings shall be provided with noncombustible, liquidtight raised sills or ramps at least 4 in. (100 mm) in height or shall be otherwise designed to prevent the flow of ignitible (flammable or combustible) liquids to the adjoining areas.~~

When used, drainage shall comply with 6.12.3 and 6.12.4.

Statement of Problem and Substantiation for Public Comment

This change is correlating requirements within NFPA 30, new Section 6.12, the proposed general requirements section.

Related Public Comments for This Document

Related Comment	Relationship
Public Comment No. 53-NFPA 30-2022 [New Section after 6.11.3.5]	

Related Item

• Public Input No. 141-NFPA 30-2021 [24.9] Related C.I. No. 501-NFPA 30-2021 [24.9.1]

Submitter Information Verification

Submitter Full Name:	Dwight Havens
Organization:	Round Lake Fire Department
Affiliation:	NFPA 30 Task Group on Containment, Drainage, and Spill Control
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Tue May 31 16:00:28 EDT 2022
Committee:	FLC-TAN

Committee Statement

Committee Action:	Rejected but see related SR
Resolution:	SR-469-NFPA 30-2022
Statement:	NFPA 30 applies to a broad range of occupancies and facilities which vary in size from the "mom and pop" mercantile occupancies to large industrial complexes. Users need clear guidance as to when these requirements apply and are asking for better information on how to meet the requirements when applicable. Containment, drainage, and spill control are methods of fire risk mitigation. Section 6.12 includes the common requirements in NFPA 30 which are used in the occupancy specific chapters and allows any occupancy specific requirements to remain

in the containment, drainage, and spill control sections of chapters 9, 10, 12, 13, 15, 16, 17, 18, and 24.This section also aligns drainage, containment, and spill control requirements in NFPA 30 with those found in NFPA 400 Hazardous Materials Code, and NFPA 5000 Building Construction and Safety Code, where deemed appropriate. Some requirements from 24.9 were moved to 6.12 as part of this consolidation of requirements. (See SR-470).

The technical changes were only intended to be limited to using MAQs as a trigger for providing containment, drainage, and spill control. This is to clarify confusion regarding users as to when these requirements are applicable. Also, the 10-gallon container threshold for implementing containment requirements was removed as it was deemed as excessive. Instead, the Technical Committee preferred to implement the analogous requirements in NFPA 400 for a 55-gallon threshold to implement spill containment requirements.

Public Comment No. 85-NFPA 30-2022 [Section No. 24.9.4.1]

24.9.4.1

An open-grated trench across the width of the opening inside of the room that drains to a safe location shall be permitted to be used as an alternative to a sill or ramp.

[Moved to 6.12.4.3.1]

Statement of Problem and Substantiation for Public Comment

This change is correlating requirements within NFPA 30, new Section 6.12, the proposed general requirements section.

Related Public Comments for This Document

Related Comment	Relationship
Public Comment No. 53-NFPA 30-2022 [New Section after 6.11.3.5]	

Related Item

- Public Input No. 128-NFPA 30-2021

Submitter Information Verification

Submitter Full Name:	Dwight Havens
Organization:	Round Lake Fire Department
Affiliation:	NFPA 30 Task Group on Containment, Drainage, and Spill Control
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Tue May 31 16:21:56 EDT 2022
Committee:	FLC-TAN

Committee Statement

Committee Action:	Rejected but see related SR
Resolution:	SR-469-NFPA 30-2022
Statement:	NFPA 30 applies to a broad range of occupancies and facilities which vary in size from the "mom and pop" mercantile occupancies to large industrial complexes. Users need clear guidance as to when these requirements apply and are asking for better information on how to meet the requirements when applicable. Containment, drainage, and spill control are methods of fire risk mitigation. Section 6.12 includes the common requirements in NFPA 30 which are used in the occupancy specific chapters and allows any occupancy specific requirements to remain in the containment, drainage, and spill control sections of chapters 9, 10, 12, 13, 15, 16,

17, 18, and 24.This section also aligns drainage, containment, and spill control requirements in NFPA 30 with those found in NFPA 400 Hazardous Materials Code, and NFPA 5000 Building Construction and Safety Code, where deemed appropriate. Some requirements from 24.9 were moved to 6.12 as part of this consolidation of requirements. (See SR-470).

The technical changes were only intended to be limited to using MAQs as a trigger for providing containment, drainage, and spill control. This is to clarify confusion regarding users as to when these requirements are applicable. Also, the 10-gallon container threshold for implementing containment requirements was removed as it was deemed as excessive. Instead, the Technical Committee preferred to implement the analogous requirements in NFPA 400 for a 55-gallon threshold to implement spill containment requirements.

Public Comment No. 86-NFPA 30-2022 [Section No. 24.9.5]

24.9.5

~~Means shall be provided to prevent ignitible (flammable or combustible) liquid spills from running into basements.~~

[Moved to 6.12.2]

Statement of Problem and Substantiation for Public Comment

This change is correlating requirements within NFPA 30, new Section 6.12, the proposed general requirements section.

Related Public Comments for This Document

Related Comment	Relationship
Public Comment No. 53-NFPA 30-2022 [New Section after 6.11.3.5]	

Related Item

- Public Input No. 128-NFPA 30-2021

Submitter Information Verification

Submitter Full Name:	Dwight Havens
Organization:	Round Lake Fire Department
Affiliation:	NFPA 30 Task Group on Containment, Drainage, and Spill Control
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Tue May 31 16:40:19 EDT 2022
Committee:	FLC-TAN

Committee Statement

Committee Action:	Rejected but see related SR
Resolution:	SR-469-NFPA 30-2022
Statement:	NFPA 30 applies to a broad range of occupancies and facilities which vary in size from the "mom and pop" mercantile occupancies to large industrial complexes. Users need clear guidance as to when these requirements apply and are asking for better information on how to meet the requirements when applicable. Containment, drainage, and spill control are methods of fire risk mitigation. Section 6.12 includes the common requirements in NFPA 30 which are used in the occupancy specific chapters and allows any occupancy specific requirements to remain

in the containment, drainage, and spill control sections of chapters 9, 10, 12, 13, 15, 16, 17, 18, and 24.This section also aligns drainage, containment, and spill control requirements in NFPA 30 with those found in NFPA 400 Hazardous Materials Code, and NFPA 5000 Building Construction and Safety Code, where deemed appropriate. Some requirements from 24.9 were moved to 6.12 as part of this consolidation of requirements. (See SR-470).

The technical changes were only intended to be limited to using MAQs as a trigger for providing containment, drainage, and spill control. This is to clarify confusion regarding users as to when these requirements are applicable. Also, the 10-gallon container threshold for implementing containment requirements was removed as it was deemed as excessive. Instead, the Technical Committee preferred to implement the analogous requirements in NFPA 400 for a 55-gallon threshold to implement spill containment requirements.

Public Comment No. 87-NFPA 30-2022 [Section No. 24.9.6]

24.9.6*

~~The containment shall have a capacity not less than that of the largest tank that can drain into it.~~

[Moved to 6.12.3]

Statement of Problem and Substantiation for Public Comment

This change is correlating requirements within NFPA 30, new Section 6.12, the proposed general requirements section.

Related Public Comments for This Document

Related Comment	Relationship
Public Comment No. 53-NFPA 30-2022 [New Section after 6.11.3.5]	

Related Item

- Public Input No. 128-NFPA 30-2021

Submitter Information Verification

Submitter Full Name:	Dwight Havens
Organization:	Round Lake Fire Department
Affiliation:	NFPA 30 Task Group on Containment, Drainage, and Spill Control
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Tue May 31 16:42:30 EDT 2022
Committee:	FLC-TAN

Committee Statement

Committee Action:	Rejected but see related SR
Resolution:	SR-469-NFPA 30-2022
Statement:	NFPA 30 applies to a broad range of occupancies and facilities which vary in size from the "mom and pop" mercantile occupancies to large industrial complexes. Users need clear guidance as to when these requirements apply and are asking for better information on how to meet the requirements when applicable. Containment, drainage, and spill control are methods of fire risk mitigation. Section 6.12 includes the common requirements in NFPA 30 which are used in the occupancy specific chapters and allows any occupancy specific requirements to remain

in the containment, drainage, and spill control sections of chapters 9, 10, 12, 13, 15, 16, 17, 18, and 24.This section also aligns drainage, containment, and spill control requirements in NFPA 30 with those found in NFPA 400 Hazardous Materials Code, and NFPA 5000 Building Construction and Safety Code, where deemed appropriate. Some requirements from 24.9 were moved to 6.12 as part of this consolidation of requirements. (See SR-470).

The technical changes were only intended to be limited to using MAQs as a trigger for providing containment, drainage, and spill control. This is to clarify confusion regarding users as to when these requirements are applicable. Also, the 10-gallon container threshold for implementing containment requirements was removed as it was deemed as excessive. Instead, the Technical Committee preferred to implement the analogous requirements in NFPA 400 for a 55-gallon threshold to implement spill containment requirements.

Public Comment No. 88-NFPA 30-2022 [Section No. 24.9.7]

24.9.7

~~Emergency drainage systems shall be provided to direct liquid leakage and fire-protection water to a safe location.~~

[Moved to 6.12.3]

Statement of Problem and Substantiation for Public Comment

This change is correlating requirements within NFPA 30, new Section 6.12, the proposed general requirements section.

Related Public Comments for This Document

Related Comment	Relationship
Public Comment No. 53-NFPA 30-2022 [New Section after 6.11.3.5]	

Related Item

- Public Input No. 128-NFPA 30-2021

Submitter Information Verification

Submitter Full Name:	Dwight Havens
Organization:	Round Lake Fire Department
Affiliation:	NFPA 30 Task Group on Containment, Drainage, and Spill Control
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Tue May 31 16:44:17 EDT 2022
Committee:	FLC-TAN

Committee Statement

Committee Action:	Rejected but see related SR
Resolution:	SR-469-NFPA 30-2022
Statement:	NFPA 30 applies to a broad range of occupancies and facilities which vary in size from the "mom and pop" mercantile occupancies to large industrial complexes. Users need clear guidance as to when these requirements apply and are asking for better information on how to meet the requirements when applicable. Containment, drainage, and spill control are methods of fire risk mitigation. Section 6.12 includes the common requirements in NFPA 30 which are used in the occupancy specific chapters and allows any occupancy specific requirements to remain

in the containment, drainage, and spill control sections of chapters 9, 10, 12, 13, 15, 16, 17, 18, and 24.This section also aligns drainage, containment, and spill control requirements in NFPA 30 with those found in NFPA 400 Hazardous Materials Code, and NFPA 5000 Building Construction and Safety Code, where deemed appropriate. Some requirements from 24.9 were moved to 6.12 as part of this consolidation of requirements. (See SR-470).

The technical changes were only intended to be limited to using MAQs as a trigger for providing containment, drainage, and spill control. This is to clarify confusion regarding users as to when these requirements are applicable. Also, the 10-gallon container threshold for implementing containment requirements was removed as it was deemed as excessive. Instead, the Technical Committee preferred to implement the analogous requirements in NFPA 400 for a 55-gallon threshold to implement spill containment requirements.

Public Comment No. 89-NFPA 30-2022 [Section No. 24.9.8]

24.9.8

~~Curbs, scuppers, or special drainage systems shall be permitted to be used.~~

[Moved to 6.12.3]

Statement of Problem and Substantiation for Public Comment

This change is correlating requirements within NFPA 30, new Section 6.12, the proposed general requirements section.

Related Public Comments for This Document

Related Comment	Relationship
Public Comment No. 53-NFPA 30-2022 [New Section after 6.11.3.5]	

Related Item

- Public Input No. 128-NFPA 30-2021

Submitter Information Verification

Submitter Full Name:	Dwight Havens
Organization:	Round Lake Fire Department
Affiliation:	NFPA 30 Task Group on Containment, Drainage, and Spill Control
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Tue May 31 16:46:08 EDT 2022
Committee:	FLC-TAN

Committee Statement

Committee Action:	Rejected but see related SR
Resolution:	SR-469-NFPA 30-2022
Statement:	NFPA 30 applies to a broad range of occupancies and facilities which vary in size from the "mom and pop" mercantile occupancies to large industrial complexes. Users need clear guidance as to when these requirements apply and are asking for better information on how to meet the requirements when applicable. Containment, drainage, and spill control are methods of fire risk mitigation. Section 6.12 includes the common requirements in NFPA 30 which are used in the occupancy specific chapters and allows any occupancy specific requirements to remain in the containment, drainage, and spill control sections of chapters 9, 10, 12, 13, 15, 16, 17, 18, and 24.This section also aligns drainage, containment, and spill control

requirements in NFPA 30 with those found in NFPA 400 Hazardous Materials Code, and NFPA 5000 Building Construction and Safety Code, where deemed appropriate. Some requirements from 24.9 were moved to 6.12 as part of this consolidation of requirements. (See SR-470).

The technical changes were only intended to be limited to using MAQs as a trigger for providing containment, drainage, and spill control. This is to clarify confusion regarding users as to when these requirements are applicable. Also, the 10-gallon container threshold for implementing containment requirements was removed as it was deemed as excessive. Instead, the Technical Committee preferred to implement the analogous requirements in NFPA 400 for a 55-gallon threshold to implement spill containment requirements.

Public Comment No. 90-NFPA 30-2022 [Section No. 24.9.9]

24.9.9

~~Emergency drainage systems, if connected to public sewers or discharged into public waterways, shall be equipped with traps or separators.~~

[Moved to 6.12.3]

Statement of Problem and Substantiation for Public Comment

This change is correlating requirements within NFPA 30, new Section 6.12, the proposed general requirements section.

Related Public Comments for This Document

Related Comment	Relationship
Public Comment No. 53-NFPA 30-2022 [New Section after 6.11.3.5]	

Related Item

- Public Input No. 128-NFPA 30-2021

Submitter Information Verification

Submitter Full Name:	Dwight Havens
Organization:	Round Lake Fire Department
Affiliation:	NFPA 30 Task Group on Containment, Drainage, and Spill Control
Street Address:	
City:	
State:	
Zip:	
Submittal Date:	Tue May 31 16:48:09 EDT 2022
Committee:	FLC-TAN

Committee Statement

Committee Action:	Rejected but see related SR
Resolution:	SR-469-NFPA 30-2022
Statement:	NFPA 30 applies to a broad range of occupancies and facilities which vary in size from the "mom and pop" mercantile occupancies to large industrial complexes. Users need clear guidance as to when these requirements apply and are asking for better information on how to meet the requirements when applicable. Containment, drainage, and spill control are methods of fire risk mitigation. Section 6.12 includes the common requirements in NFPA 30 which are used in the occupancy specific chapters and allows any occupancy specific requirements to remain

in the containment, drainage, and spill control sections of chapters 9, 10, 12, 13, 15, 16, 17, 18, and 24.This section also aligns drainage, containment, and spill control requirements in NFPA 30 with those found in NFPA 400 Hazardous Materials Code, and NFPA 5000 Building Construction and Safety Code, where deemed appropriate. Some requirements from 24.9 were moved to 6.12 as part of this consolidation of requirements. (See SR-470).

The technical changes were only intended to be limited to using MAQs as a trigger for providing containment, drainage, and spill control. This is to clarify confusion regarding users as to when these requirements are applicable. Also, the 10-gallon container threshold for implementing containment requirements was removed as it was deemed as excessive. Instead, the Technical Committee preferred to implement the analogous requirements in NFPA 400 for a 55-gallon threshold to implement spill containment requirements.