



Fuels Safety Program	Ref. No.: FS-235-18
Liquid Fuels Handling Code Adoption Document Amendment	Date: March 27, 2019

IN THE MATTER OF:

*Technical Standards and Safety Act 2000, S.O. 2000, c. 16, and
Ontario Regulation 223/01 (Codes and Standards Adopted by Reference), and
Ontario Regulation 217/01 (Liquid Fuels)*

The Director for the purposes of Ontario Regulation 217/01 (Liquid Fuels), pursuant to section 7 of Ontario Regulation 223/01 (Codes and Standards Adopted by Reference), hereby provides notice that the LIQUID FUELS HANDLING CODE ADOPTION DOCUMENT published by the Technical Standards and Safety Authority and dated June 1, 2001, as amended, is further amended as follows:

The *Liquid Fuels Handling Code 2017* published by the Technical Standards and Safety Authority is hereby adopted, as are the following amendments and additions:

1. Clause 1.2.4 is revoked and the following substituted:

1.2.4. Except for section 3.2.2, any record required to be created, maintained or retained by this Code shall be kept for seven years. For the purpose of section 3.2.2, only the most recent and immediately preceding record shall be retained for API tank inspections.

Background:

The previous clause required that records be kept for the life of the facility or equipment. This seems excessive given the Canadian Council of Ministers of the Environment (CCME) *Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products* requires records be kept for seven years.

Sites with single-wall steel USTs must do Cathodic Protection (CP) testing every two years. To ascertain that the tank/piping is protected, they must have the previous CP record for comparison. Therefore, a 7-year retention period will not negatively impact upon the interpretation of the CP tests.

API and S601 (formerly S630) vertical tank inspections are required at 10-year intervals.

2. Clause 3.2.1.10 is revoked and the following substituted:

3.2.1.10. Aboveground storage tanks exposed to vehicular traffic shall be protected from impact. Protection for the aboveground storage tanks must be located at a minimum of one metre from the tanks.

Note: *Advisory FS-114-07 R4 (posted on the TSSA website) provides an interpretation of this clause.*

Background:

To establish that vehicle protection must be at least one metre away from all aboveground tanks, not just those at retail sites and to direct code users to the Advisory.

3. Clauses 3.2.2.1 and 3.2.2.2 are revoked and the following substituted:

3.2.2.1. Aboveground vertical storage tanks constructed in accordance with CAN/ULC-S601 (formerly ULC-S630) or API Std 650 shall be given an in-service external inspection at intervals not exceeding 5 years in accordance with the requirements of API Std 653.

3.2.2.2. Aboveground vertical storage tanks constructed in accordance with CAN/ULC-S601 (formerly ULC-S630) and API Std 650 that do not have double bottoms shall be internally inspected at least every 10 years, beginning when the tank is 15 years old or in accordance with the interval criteria specified in API Std 653, whichever is less.

Background:

CAN/ULC-S601 provides minimum requirements for steel, non-pressure tanks that are used for the aboveground storage of flammable and combustible liquids compatible with the material of construction and with a specific gravity not greater than 1.0. This Standard covers several styles of aboveground tanks that were previously covered in separate standards (e.g. ULC-S630).

By adding “formerly ULC-S630” to the above clauses, it makes it clear to users of the LFHC 2017 that these clauses apply to grandfathered S630 tanks as well as new tanks built to the vertical tank section of the CAN/ULC-S601-14. Also, the ULC standards are construction standards, not installation documents.

4. Clause 3.2.3.2 is revoked and the following substituted:

3.2.3.2. Markings required by Clause 3.2.3.1 shall be:

- (a) of a colour specified in *Using the Canadian Fuels Association Colour-Symbol System to Mark Equipment and Vehicles for Product Identification* on a contrasting background; and
- (b) maintained to be clearly legible at all times.

Note: *Using the Canadian Fuels Association Colour-Symbol System to Mark Equipment and Vehicles for Product Identification* refers to aboveground tanks at distribution terminals. While it is not necessary to follow this document for tank installations outside distribution terminals, all aboveground

tanks are required to have product markings on a contrasting background for ease of identification in case of fire.

Background:

The intent of this clause is to clearly identify the product contained in aboveground tanks. Product markings on a contrasting background, regardless of whether they follow the Canadian Fuels Association requirements, meet the intent of this clause.

5. The following clauses are added to subsection 3.2

3.2.4 Commissioning of Vertical CAN/ULC-S601 (formerly ULC-S630) or API 650 Tanks and Associated Piping

3.2.4.1 Vertical CAN/ULC-S601 (formerly ULC-S630) or API 650 tanks and the associated piping shall be commissioned by a person who is a holder of a valid TSSA PM.3 certificate.

3.2.5 Additional Requirements for Cleaning CAN/ULC-S601 or API 650 Tanks

3.2.5.1 Any person who drains a vertical CAN/ULC-S601 (formerly ULC-S630) or API 650 tank in preparation for tank cleaning or cleans such a tank shall hold a valid TSSA PM.3 certificate or be supervised by a person who holds a valid TSSA PM.3 certificate, and shall, as a minimum, follow the requirements in *API Std 2015, Requirements for safe entry and cleaning of petroleum storage tanks*.

3.2.5.2 Persons assisting in draining or cleaning the tank shall have, as a minimum, a valid TSSA PMH certificate.

Background:

Section 11 of O. Reg. 217/01 (Liquid Fuels) states:

Certificate required

11. No person shall install, repair, service or remove equipment at a facility unless the person holds a certificate for that purpose.

“facility” means a permanent or mobile retail outlet, bulk plant, marina, cardlock/keylock, private outlet or farm where gasoline or an associated product is handled other than in portable containers

At a bulk plant, which is a facility, a certificate holder is required to install/repair/service the equipment (i.e. the tanks).

O. Reg. 216/01 (Certification of Petroleum Mechanics) states:

PM.3 certificate

12. (1) A person who holds a PM.3 certificate may, without supervision, install, remove, alter, repair, test, service and maintain any type of aboveground installation and the equipment and accessories essential to its operation and, in so doing, may,

- (a) install aboveground tanks and engage in component assembly, spill containment, electrical hook-up and pressure testing;
- (b) remove aboveground tanks and engage in draining and disconnecting the tank system and in purging tanks;
- (c) install aboveground petroleum transfer systems, piping or tubing and equipment related to them, and engage in component assembly, spill containment and vapour recovery;
- (d) repair and maintain systems for detecting leaks and monitoring tanks; and
- (e) install, remove, repair and maintain bulk handling equipment, including troubleshooting and testing mechanical, hydraulic, electrical and electronic components.

(2) REVOKED

(3) The holder of a PM.3 certificate may, without supervision, work on any type of aboveground equipment that falls within the scope of the PM.3 certificate so long as the holder has the required experience and time on that type of equipment and that experience and time are documented in a form acceptable to the director.

TSSA recognizes that in-field construction of API and vertical ULC tanks requires special training which PM.3s do not have. Also, during construction, there is no contact with fuel since the tank has not yet been commissioned. Therefore, a PM3 certificate is not required for construction (similarly, a PM2 certificate is not required to construct an underground tank). However, once the tank is connected to piping and commissioned, this work will require a PM3 certificate. Operators shall ensure that the people installing, commissioning or maintaining these tanks have the appropriate qualifications, certifications and required training for the job.

6. Clause 4.3.1.7(e) is revoked and the following substituted:

4.3.1.7. Vent pipes, except for emergency vents on aboveground tanks, shall
(e) comply with the distances specified in Table 2;

Background:

The original clause referred incorrectly to Table 3.

7. Clause 5.8.10 is revoked and the following substituted:

5.8.10. Within one year of the effective date of this code, a fire extinguisher with a minimum rating of 40B:C shall be readily available for use during fueling.

Background:

To harmonize with clauses 6.9.1 and 9.3.7 which allow one year to upgrade the fire extinguisher to 40B:C.

8. The following clause are added to subsection 6.1.5:

6.1.5.3 No one other than the fuel attendant shall be on board a watercraft during refueling.

Background:

Clause 5.5.9 in the LFHC 2017 states:

5.5.9. At each marina there shall be three legible signs visible to all persons using the dispensers with letters having a minimum height of 25 mm. The signs shall read:

- (a) "WARNING - NO ONE OTHER THAN THE FUEL ATTENDANT SHALL BE ON BOARD A WATERCRAFT DURING REFUELING."
(b) "WARNING - ALL ENGINES SHALL BE OFF DURING REFUELING AND THERE SHALL BE NO SOURCES OF IGNITION ON BOARD OR WITHIN 3 METRES OF THE FUEL TRANSFER POINT" and ...

The new clause is added to prohibit action (a). Clause 5.5.9(b) is covered by clause 6.1.5.1.

9. Table 4 is revoked and the following substituted:

Table 4
Leak detection testing and monitoring of aboveground storage tanks

Type of tank	Commissioning test	In-Service Monitoring		Leak suspected
		Continuous	Periodic	
Vertical tank in dike	Visual inspection* during liquid media test; secondary containment test for double bottom	Inventory reconciliation and double bottom or secondary containment monitoring	API Std 653 or tank floor inspection every 10 years (not applicable to double bottom tank)	Identify, repair, and retest
Horizontal tank in dike**	Visual inspection* during liquid media test	Inventory reconciliation and secondary containment monitoring	Visual inspection once per week & keep a record (or sensor in closed containment or double-bottom)	Identify, repair, and retest
Horizontal single-wall tanks < 5000L	Visual inspection* during liquid media test	N/A	Visual inspection once per week & keep a record (or sensor in closed containment)	Identify, repair, and retest
Tanks in closed containment†	Visual inspection* during liquid media test	N/A	Visual inspection once per week & keep a record (or sensor in closed containment)	Identify, repair, and retest
Double wall‡	Secondary containment monitoring***	Secondary containment monitoring***	None required	Identify, repair, and retest

* Visual leak detection shall apply to single- or double-wall storage tanks and piping. See Clause 7.5.6.

** Where it is possible to do a visual inspection of the tank and dike, inventory reconciliation is not necessary.

***Secondary containment monitoring may be done by either manual or electronic means:

Manual Monitoring: Visually inspect the tank vacuum gauge (if so equipped) to ensure there is vacuum (a gauge reading of less than 42kPa indicates a problem, contact the tank manufacturer.) or if the tank does not have a vacuum gauge, manually dip the atmospheric interstitial space (if so equipped) to ensure that there is no liquid (petroleum or water) present, once per week. See clause 7.5.2 (a & b) for record keeping requirements.

Electronic Monitoring: Where the tank interstice is equipped with a vacuum sensor or the tank contains an interstitial space sensor that is connected to a monitoring system, the alarm must be sent to an area that is frequented by responsible personnel. See clause 7.5.5

†An example of a tank in closed containment is a “tank in a box”.

‡Applies to double-wall tanks, which have interstitial space that allows for monitoring.

Background:

A double-bottom is not considered secondary containment. Therefore, it is important to specify that this space be monitored to detect leaks. The ULC Standards do not mandate monitoring of the double-bottom systems. They only mandate that the double-bottom be vented which results in the probability that there will be water, a source of corrosion, between the bottoms due to condensation. Since these tanks are constructed of the thinnest steel permitted, the end user must be made aware that the double-bottom space must be monitored and water removed.

ULC-S601 double-wall steel tanks are designed to be monitored using the vacuum gauge. Closed secondary containment tanks are similar to double-wall tanks but they do not have a vacuum gauge. Instead they have a pipe that allows dipping of the interstice.

ULC-S601 requires that double-wall ASTs be marked to indicate: "A vacuum gauge reading below 42 kPa indicates a problem. Contact the manufacturer."

For additional instructions on aboveground tank monitoring, see clause 7.5.2 below.

10. Clause 7.5.2 is revoked and the following substituted:

7.5.2. (a) For underground tanks, a vacuum gauge may be used as the monitoring system required by Clause 2.2.2.1(d), provided that it is checked daily (excluding Saturday, Sunday, and holidays when the facility is closed) and a record of the result is recorded in a log.

7.5.2. (b) For aboveground tanks, visually inspecting the vacuum gauge or manually dipping the atmospheric interstitial space may be used to monitor the secondary containment as required by Table 4 provided it is done weekly and a record of the result is recorded in a log.

11. Clause 8.2.9 is revoked and the following substituted:

8.2.9. Despite Clauses 8.2.4, 8.2.6 and 8.2.8, where a dispenser is being replaced or upgraded and there is no excavation, an environmental assessment report is not required.

Background:

The dispenser exemption was added for aboveground tanks in clauses 8.2.6 and 8.2.8.

12. The following API standard is added to Appendix A, Reference Publications:

Std 2015 (2018)
Requirements for Safe Entry and Cleaning of Petroleum Storage Tanks

Background:

This standard is referenced to provide guidance for cleaning of API and vertical CAN/ILC-S601 tanks. Please see item number 5.

This amendment is effective as of May 21st 2019.

DATED this 27th day of March 2019.

ORIGINAL SIGNED BY

John Marshall
Director, O. Reg. 217/01 (Liquid Fuels)

Sent to: TSSA Liquid Fuels Council, TSSA Liquid Fuels Risk Reduction Group, CFA, CIPMA, OFM, COHA, ULC, IHSA, OPCA, and posted to the TSSA website