
STANDATA bulletin 23-FCB-006

Fire

Electronic liquid measurement

Date Issued: August 2024

Page 1 of 3

Purpose

To clarify when a centralized automatic tank gauging (ATG) system meets the intent of Article 4.4.4.1. for liquid level measurements and Article 2.2.1.2. of Division C maintenance of records of the National Fire Code - 2023 Alberta Edition (NFC(AE)).

Discussion

The NFC(AE) establishes criteria for storage tank owners to keep records, perform tests, measurements, and reconciliation calculations to determine if any portion of their storage tank system is leaking.

Company-owned fuel-dispensing stations are automating and centralizing their fuel inventory records with ATG systems. An ATG system is an electronic measurement device installed in fuel storage tanks and measures fuel level input, throughput, and performs reconciliation automatically. ATG systems can also measure water levels at the bottom of tanks for determining ingress leaks.

Companies can centrally collect data from the ATG's and accurately monitor the liquid levels as if the retail operator was performing the tasks manually. This means that a company retail service station operator would no longer complete and maintain an on-site fuel inventory dip book.

It is important to note there are ATG systems that are not certified as a precision leak detection system. These systems do not meet the intent of Subsection 4.4.4.1 therefore the owner/operator must perform leak detection tests as per the NFC(AE).

Companies that use a centralized ATG system as an automatic fuel inventory dip book with reconciliation and water level measurement capabilities, meet the intent of Subsection 4.4.4.1 for liquid level measurements and Article 2.2.1.2. of Division C regarding maintenance of records.

Fuel-dispensing stations utilizing the ATG system are required to provide the authority having jurisdiction contact information for obtaining liquid level records when requested.

Code References

NFC(AE) – Article 4.4.4.1.

4.4.4.1. Inventory Reconciliation

(See Note A-4.4.4.1.)

1) Where inventory reconciliation is required by this Section, the liquid level in any storage tank shall be measured at intervals not greater than 7 days in conformance with Sentences (2) to (4), except that at fuel-dispensing stations the measurements shall be taken each day the station is in operation.

2) The level of water at the bottom of an underground storage tank shall be measured at intervals not greater than 7 days, except that at fuel-dispensing stations the measurements shall be taken each day the station is in operation.

3) Investigative action shall be undertaken if the inventory reconciliation described in Sentence 4.4.2.1.(2) indicates the following inexplicable conditions:

a) a monthly loss of

i) 0.5 percent or more of the throughput from an underground storage tank, or

ii) 1.0 percent or more of the throughput from an aboveground storage tank,

b) three consecutive losses greater than 200 L/day, and

c) a water level greater than 50 mm.

4) A record of the measurements for each storage tank and of the computations described in Sentence (3) shall be retained in conformance with Article 2.2.1.2. of Division C.

A-4.4.4.1. Inventory reconciliation and liquid level measurements can only be conducted on storage tanks that have a metered pump, dispenser or some other type of measuring device that can determine the amount of product withdrawn over a specific period of time. Other leak detection methods must be used for piping systems and storage tanks without meters or measuring devices.

Inventory reconciliation leak detection methods used for a storage tank should follow an established procedure in order to minimize errors and determine any trend that indicates a loss of product from the tank.

The recording of pump meter readings, shipments, internal transfers, product delivery receipts or measurements of the level of contents of a storage tank shall not in and of itself constitute a record as required by Article 4.4.4.1. In addition, suppliers of flammable and combustible liquids should provide their customers with sufficient data to conduct proper inventory reconciliation. Inventories, which have been adjusted for volume through temperature compensation, must also be available to operators by volume according to meter measurements.

Inventory reconciliation is not to be confused with statistical inventory reconciliation (SIR), which is a third-party computerized analysis of tank operator inventory data.

Indications of a potential leak from inventory reconciliation practice include:

(a) any unexplained loss or gain of 0.5 percent or more of the throughput from an underground storage tank or a loss of 1.0 percent or more of the throughput from an aboveground storage tank noted for each stored product in a calendar month, as indicated by the recording and reconciliation of inventory records,

(b) inventory reconciliations showing five consecutive days of unexplained product losses,

- (c) inventory reconciliations showing 18 days of unexplained losses in one calendar month, or
- (d) the level of water at the bottom of an underground storage tank exceeding 50 mm.

Division C, Sentences 2.2.1.2.(1), (2), (3), (4), (6) and (7)**2.2.1.2. Records**

- 1) Where this Code requires that audits be performed, plans be provided, or tests, inspections, maintenance or operational procedures be performed on a fire safety system, records shall be made and the original or a copy shall be retained at the premises for examination by the authority having jurisdiction.
- 2) The initial verification, integrated systems testing reports or test reports for each system shall be retained throughout the life of the systems.
- 3) Records of tests, inspections, maintenance or operational procedures undertaken after the initial tests referred to in Sentence (2) shall be retained so that at least the current and the immediately preceding records are available.
- 4) Notwithstanding the conditions stated in Sentence (3), no record shall be destroyed within five years of having been prepared and records shall be retained on site.
- 6) Upon request by the authority having jurisdiction, the record referred to in Sentence 4.4.4.1.(4) of Division B shall be the subject of an audit performed in a manner acceptable to the authority having jurisdiction.
- 7) Records acceptable to the authority having jurisdiction of maintenance and inspections of self-service outlets, fuel-dispensing stations and marine fuel-dispensing stations required by Article 2.2.9.1. shall be retained in conformance with this Article.

Unless stated otherwise, all Code references in this STANDATA are to Division B of the National Fire Code – 2023 Alberta edition.

Issued by the Provincial Fire Administrator

[Original Signed]

Tina Parker

Alberta Municipal Affairs – Technical and Corporate Services

Email: safety.services@gov.ab.ca Phone: 1-866-421-6929

To sign up for our List Subscription Service: municipalaffairs.gov.ab.ca/am_list_subscription_services