DER-25 / Petroleum Bulk Storage (PBS) Inspection Guidebook

New York State Department of Environmental Conservation

DEC Program Policy

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I. Summary

This program policy provides guidance for New York State Department of Environmental Conservation (DEC) Division of Environmental Remediation (DER) staff on conducting inspections at Petroleum Bulk Storage (PBS) facilities to determine compliance with New York State (NYS, State) Environmental Conservation Law (ECL) Article 17, Title 10, PBS Regulations 6 NYCRR Part 613, and the United States Environmental Protection Agency (USEPA) Federal Underground Storage Tank (UST) regulations (40 CFR Part 280). The attached DER-25 / PBS Inspection Guidebook addresses inspections for both underground and aboveground storage tank systems at PBS facilities.

II. Policy

It is the policy of DER to provide guidance and training to promote and achieve consistency and compliance with ECL Article 17, Title 10, and applicable federal and State regulations.

III. Purpose and Background

ECL Article 17, Title 10 sets standards and authorizes DEC to promulgate regulations. The PBS regulations have been in effect since December 27, 1985, with revisions adopted on October 11, 2015, and July 19, 2023. This guidance provides DER staff with consistent procedures for inspection of PBS facilities, as well as consistent interpretation and application of the PBS regulations. It also provides owners/operators of PBS facilities with a clear understanding of which compliance items DER staff will evaluate during PBS inspections.

IV. Responsibility

Responsibility for the PBS program is assigned to the Facility Compliance Section within DER's Bureau of Spill Response and Prevention (BSRP) in DEC Central Office. This responsibility includes program oversite, regulatory interpretation, training, evaluation of new technologies, and technical support in connection with appeals. BSRP is responsible for maintaining and updating this policy in DER, in consultation with the Office of General Counsel. DER program staff are responsible for implementing this policy, with input from other involved DEC Divisions and DEC Regional Offices.

V. Procedure

The PBS Inspection Guidebook establishes, over pages 7 to 19, procedures for DEC staff to follow when conducting a PBS inspection at a regulated facility. The rest of the Guidebook outlines the technical guidance necessary to make a regulatory compliance determination regarding the facility.

Site-based topics generally apply to every facility and are covered once in their own dedicated sections:

- **Pertinent Definitions** covers terms specific to the PBS program.
- **Applicability of the PBS Regulations** explains how the PBS regulations are structured, and which requirements apply to a regulated facility depending on the type/age of the tank system(s) found on site.
- **Registration** describes how regulated facilities must furnish their facility/tank information to DEC and ensure that this information is current and accurate.
- **As-Built Diagram** defines the minimum level of information facility site diagrams must contain to illustrate the dimensions/location of buried tank system equipment on site.
- **Financial Responsibility** explains how regulated facilities must demonstrate that they have the financial means necessary to pay for corrective actions in case of a spill from their federally regulated underground storage tank system.

Tank-based topics apply to a facility depending on the tank system types they have. Tank systems are split into four "Subparts" – 2, 3, 4, & 5 – correlating to sections of the PBS regulations specifically written for them. Each Subpart has its own section within the Guidebook; as such, tank-based topics are covered multiple times (as applicable to each Subpart):

- **Out-of-Service (OOS) Status and Permanent Closure** covers the steps that facilities must undertake when their tank system is inactive or to be closed.
- **Tank System: Design/Construction, Compatibility, Installation, Repair** describes the technical requirements for these specific concepts (as they relate to tank system components).
- **Operator Training** explains the federal program mandating that properly trained individuals be designated for underground storage tank systems.
- **Walkthrough Inspections** refers to periodic rounds of the facility, required to mitigate the risk of equipment failure (and the resulting spills/releases) by making facility staff aware of any ongoing issues with their tank system equipment.
- **Leak Detection** outlines the methods and equipment facilities must employ to monitor tank systems for spills and possible integrity issues with the primary petroleum containment.
- **Secondary Containment** covers the equipment/structures required around primary containment to contain spills – and prevent them from becoming releases – before they can be addressed.
- **Corrosion Protection** explains how the risk of degradation of metal tank system components (when in contact with certain media/substances) must be reduced, if not eliminated.
- **Color Code and (Tank) Label** covers the necessary identification of the different tank systems on site, as well as the specifications of and petroleum types currently stored in each tank.
- **Fill Port Catch Basin** refers to containment devices around fill ports associated with underground storage tank systems, designed to capture spills/overfills during deliveries.
- **Overfill Prevention** outlines the different equipment options available to facilities for warning delivery persons when to stop a transfer (so overfills do not occur).
- **Valves** refers to ancillary equipment requisite to control petroleum flow and avoid spills.

Spills also has its own section at the end of the Guidebook, primarily to cover the situations that all facilities must report to the DEC Spill Hotline.

Most regulatory compliance topics consist of the following subsections:

- **Purpose** (P) explains why the topic is important/required.
- **Requirements** (R) restates the applicable regulatory provisions – often in a manner easier to understand – and outlines what an inspector should expect during the site visit.
- **Options** (O) outlines the different choices that would be acceptable to meet the regulatory requirements for the topic (and Subpart).
- **Issues** (I) lists the specific situations that inspectors should look out for, often based on the inspectors' collective experience.
- **Questions** (Q) enumerates – and distinguishes between – the different questions and possible responses in the PBS Inspection Form for each topic.

The table of contents for the regulatory compliance topics is also presented in a grid format, due to the repeating nature of many of these topics (since they pertain to different Subparts).

Note: *this document features cross-references to specific sections and the corresponding page numbers (e.g., on both halves of the Table of Contents); these references are hyperlinked to the listed section/page, and the reader can navigate to them by clicking on the reference.*

VI. Related References

National Fire Protection Association (NFPA). 2012. NFPA 30: Flammable and Combustible Liquids Code.

New York State DEC. 2010. DER-10, Technical Guidance for Site Investigation and Remediation.

New York State DEC. 2015. 6 NYCRR Subpart 374. Standards for the Management of Used Oil.

New York State DEC. 2022. 6 NYCRR Part 664. Freshwater Wetlands Mapping and Classification.

New York State DEC. 2023. 6 NYCRR Part 613. Petroleum Bulk Storage regulations.

New York State DEC. 2025. DER-40, Operator Training.

New York State DEC. 2025. Petroleum Bulk Storage Inspection Form v.7 (1/10/2025).

New York State Department of State. 2019. 2020 Fire Code of New York State.

New York State, Education Law, Article 145, Title 8.

New York State, Environmental Conservation Law, Article 17, Title 10.

New York State, Environmental Conservation Law Article 19, Title 3.

New York State, Navigation Law Article 12, Section 170 et. seq.

USEPA. 2002, July 17. Federal Register, Vol. 67, Pg. 47117.

USEPA. 2015. Federal Underground Storage Tank Regulations, 40 CFR Part 280.

U.S. Nuclear Regulatory Commission. 2015. Domestic Licensing of Production and Utilization Facilities, 10 CFR Part 50.

Petroleum Bulk Storage (PBS) Inspection Guidebook

April 10, 2026

(Errata Issued June 2026)

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P = Purpose; R = Requirements; O = Options; I = Issues; Q = Questions

Goals of an Inspection

Inspections are performed to determine compliance with, and if necessary, provide basis for enforcement of the Petroleum Bulk Storage (PBS) regulations (6 NYCRR Part 613), which has the stated purpose of protecting public health and the environment by minimizing the risk of petroleum contamination from regulated tank systems. Inspections identify areas where these requirements are not being met, and any areas where best management practices (BMPs) should be adopted to provide increased protection against spills/releases.

Required Practices

State and federal regulations identify the minimum requirements that must be met to protect public health and the environment from releases at a PBS facility. Facilities not compliant with all applicable requirements are in violation of the regulations, and the facility owner, tank system owner, and operator will then be held liable for penalties and be required to implement the curative measures sought by the New York State Department of Environmental Conservation (NYSDEC or DEC).

Facilities should note that the requirements of the 2015 version of U.S. Environmental Protection Agency's (USEPA or EPA) Underground Storage Tank (UST) regulations (codified in 40 CFR Part 280) have been incorporated into the 2023 revisions to the PBS regulations, making the latter at least as stringent as – if not more than – the former. As such, full compliance with Part 613 implies compliance with 40 CFR Part 280.

Delegated County Regulations

Three counties in New York State – Nassau, Suffolk, and Westchester – have been delegated by DEC to run their own PBS programs in DEC's stead. Most facilities in these counties must then register with the enforcing County agency and comply with the more-stringent County PBS regulations, though Part 613 – and by extension, 40 CFR Part 280 – continue to apply. (DEC retains sole jurisdiction over facilities that either: were created under the Public Authorities Law; or have a State agency listed as the property owner, tank owner, or tank operator. Such sites must always comply with the PBS regulations – instead of the County regulations – regardless of their location in the State.)

Any inspection performed by DEC staff at a facility under County purview should not be taken as an evaluation of the site's compliance with the applicable County regulations. DER-25 likewise may note similar requirements between the federal/State regulations and the County regulations but should not be taken as a guidance document for County regulations: it speaks solely to Part 613.

Parallel Codes/Regulations

The PBS regulations overlap significantly with other sets of regulations, though these were written for different purposes and are separately enforced by other agencies/DEC divisions:

- The *Uniform Fire Prevention and Building Code* or the *Uniform* Code (19 NYCRR Parts 1219 to 1229) incorporates the 2020 Fire Code of New York State which focuses on fire safety. The Uniform Code is administered and enforced by the local jurisdiction having authority (e.g., town/village/city fire/building code departments, or the government agency owning the land), in accordance with NYS Department of State (DOS) rules and regulations.
- The *Petroleum Products* regulations (1 NYCRR Part 224) deals with the quality of petroleum products and the accuracy of the commercial facilities that sell/dispense them; these are enforced by the NYS Department of Agriculture and Markets.
- The *Petroleum and Volatile Organic Liquid Storage and Transfer* regulations (6 NYCRR Part 229) focuses on air quality and the reduction of volatile organic compound (VOC) emissions; these are enforced by DEC's Division of Air Resources (DAR).

- The *Standards for the Management of Used Oil* regulations (6 NYCRR Subpart 374-2) focuses on the use, safe storage, and disposal of used oil; these are enforced by DEC's Division of Materials Management (DMM).

Facility owners/operators are responsible for separately complying with these codes, along with any others applicable to their facility. As such, PBS inspections should not be taken as an accurate assessment of a facility's compliance with any of these Codes outside of the PBS regulations. Consequently, DER-25 may note any shared requirements, but is intended as a guidance document solely for the PBS regulations.

Questions (and possible violations) regarding these external regulations should be referred to the following (or their respective Regional/local counterparts):

- *Uniform Code* (including the *Fire Code*) – DOS' Division of Building Standards and Codes, Technical Support Unit (codes@dos.ny.gov)
- *Petroleum Products* regulations – Agriculture and Markets' Division of Weights and Measures (agr.sm.weightsandmeasures@agriculture.ny.gov)
- *Petroleum and Volatile Organic Liquid Storage and Transfer* regulations – DEC's Division of Air Resources (DAR), Bureau of Stationary Sources (dar.web@dec.ny.gov)
- *Standards for the Management of Used Oil* regulations – DEC's Division of Materials Management (DMM), Bureau of Hazardous Waste and Radiation Management, Hazardous Waste Compliance and Technical Support Section (info.sqg@dec.ny.gov)

Questions – PBS-related or otherwise – may also be sent to DEC's Division of Environmental Remediation (DER), Bureau of Spill Response and Prevention (BSRP), Facility Compliance Section (FCS) (derweb@dec.ny.gov).

Best Management Practices

Best management practices (BMPs) are additional measures or precautions owners/operators can take to further reduce the risk of a release at their facility. The implementation of BMPs therefore is not required to meet the regulations but are strongly encouraged as they exceed regulatory requirements. BMPs may also be required if issued in a consent order or as part of a condition in a DEC-approved variance. Examples of BMPs include:

- *Comprehensive as-built plans* – As-built diagrams may contain details beyond the information required for facilities with UST systems. These details include the location of emergency stop (E-stop) switches, overfill devices, and monitoring system panels. As-built plans may also include information for aboveground storage tank (AST) systems and Category 1 UST systems.
- *Organized recordkeeping* **–** Proper organization of records provides easy access to operators, decreases the likelihood of clerical errors, and helps facilitate inspections. Facilities are advised to gather all records tied to compliance with the PBS regulations, in a single database/location such as a compliance binder or a computer.
- *Data collection for inventory monitoring* **–** Having the same person take inventory measurements at the same time each day helps reduce errors introduced by daily logistical occurrences (e.g., delivery schedules) and differing recording procedures between employees.
- *Multiple leak monitoring methods* **–** Utilizing additional leak detection methods (beyond the required methods) increases the likelihood of detecting a spill. An example would be performing an annual tank tightness test to supplement continuous interstitial monitoring to discover leaks from double-walled tanks.

Pre-Inspection

Planning Inspections

Inspectors are advised to plan multiple inspections on any given day to maximize the number performed. The following factors must be considered:

- *Proximity* – Inspecting facilities that are near one another will reduce travel time.
- *Distance to DEC Office* – Some facilities are more remote than others and the total time from and back to the DEC office needs to be considered.
- *Common owner/operator and/or site layout* – Facilities which share a common owner/operator or similar design may shorten the total inspection time.
- *Normal business hours of each facility* – It is a good idea to get a snapshot of facility operation during peak business hours, but it can be cumbersome to the tank owner/operator to have to set time aside for an inspection; at the same time, an inspection outside of normal business hours should be avoided.

Announcing Inspections

There are two types of inspections – announced and unannounced inspections – each with varying degrees of reasonable advance notice[1] to the facility representative (prior to the inspection), based on facility compliance history and the responsible inspector.

Announced inspections include most inspections and are scheduled in advance with consent from both the inspector and the facility. This grants the facility representative time to gather all necessary records[2] and ensure that someone is available to facilitate the inspection; these in turn should allow for a shorter site visit.

Unannounced inspections are performed to provide an unembellished view of facility compliance on a typical operating day, allowing inspectors to observe violations that may be present under normal operation conditions.

Records[2] for the last 30 days of leak detection must be available immediately upon request, during either type of inspection. All other documents must be made available to the inspector within three business days after an unannounced inspection; in contrast, all documents should already be present and available during announced inspections.

Scheduling Inspections

For announced inspections, the inspector should:

- Call to find a time reasonable for both the inspector and the facility representative (i.e., tank owner, tank operator, site manager, etc.). The inspection will need to be either rescheduled or performed unannounced if a mutually agreed-upon time cannot be found.
- Identify themselves, state that they will be conducting a PBS compliance inspection and specify what is to be inspected.
- Ensure that the facility representative is familiar with the site.
- Inquire about past inspection history, ongoing and completed curative measures, and spill history.
- List documents/records that the facility representative must have available at the time of the inspection.
- Add any nearby facilities (with the same owner/operator/representative) to a chain of inspections, as appropriate.

Inspectors should also remind the facility representative of the scheduled inspection by contacting them a day in advance.

[1] 6 NYCRR 613-1.4(b): DEC inspectors may, with reasonable notice, enter a facility for a compliance inspection.
[2] 6 NYCRR 613-1.4(a): DEC inspectors must be allowed to review and copy records held by the facility.

For unannounced inspections, the inspector should:

- Provide the facility with the minimum amount of reasonable notice. Reasonable notice in these cases may amount to calling the facility representative right before traveling to the location or simply showing up at the location and asking on-site staff for permission to perform the inspection. (Note that inspections should be performed during normal business hours.)
- Add any nearby facilities (with the same owner/operator/representative/layout) to a chain of inspections, as appropriate.

Questions

INSP_ann	*Is the inspection announced or unannounced?*
A	» The inspection was scheduled with the facility prior to the inspection.
UA	» The inspection is performed with minimal advance notice to the facility.

What to Review

Documents and reports pertinent to the facility should be reviewed prior to the site visit for a more efficient inspection. These documents include the Facility Information Report (FIR), any previous inspection reports, spill reports, and other records that may have been furnished to the DEC.

Facility Information Report (FIR)

The facility information report (FIR) is a document that summarizes registration information as recorded on DEC's Bulk Storage database, the Unified Information System (UIS). The FIR provides information on:

- past inspections (i.e., date of last inspection, who inspected the site previously);
- the registration expiration date; and
- site/contact information that the facility owner (or their representative) specified on their registration application – facility address, facility owner, tank system owner/operator, Class A/B Operator, number of tanks, tank system details, tank Category, etc.

This makes the FIR the best place to identify incorrect/nonsensible registration information. Site-specific information listed on the FIR can also be cross-referenced with the PBS regulations to determine issues prior to an inspection. Some registration issues can be identified right away by recognizing incompatible tank system equipment codes such as:

- Category 3 underground tanks not being double walled
- Underground tanks and/or piping with noncompliant (or no) leak detection
- Aboveground storage tanks (ASTs) with design capacities over 10,000 gallons not having secondary containment
- 00 or 99 codes which signify "None" or "Other"

Any uncertainties or discrepancies should be noted and reviewed during the inspection to check if an information correction is needed or if a tank system indeed has noncompliant equipment. Other issues will need to be identified by comparing what exists at the facility to what is on their registration. Getting familiar with and identifying issues on the FIR (prior to the site visit) expedites an inspection and helps the inspector know what to look for and what to ask about.

Previous Inspection Reports/Notices of Violation (NOV)

Reviewing previous inspections in UIS – as well as any Notices of Violation (NOVs) sent to the tank system owner/operator after the inspection – identifies issues the facility has had in the past and highlights areas that should be examined during the inspection. Past NOVs list all violations observed during the previous inspection, the required curative measures, and any deadlines that the owner/operator was required to meet.

Inspectors should also check in UIS the previous inspector's comments on the facility, as well as any comments regarding the facility's attempts at correcting the violations. These may be relevant to the current inspection.

Spill Reports

The records of previously reported spills at a facility are available to DEC inspectors through UIS. Spills are typically tied to equipment failure or user error, and while the facility most likely cleaned the spill at the time of the incident, inspectors should still check during the site visit that the cause(s) – and cleanup – of the spill have been addressed.

Other Records

Inspectors should also review other pertinent documentation such as repair records prior to the site visit to better identify tanks with outdated leak detection methods or recurring issues. Inspectors can also verify proper closure of tanks at the site by reviewing closure reports and site assessment reports, both of which must be furnished to the DEC as part of tank closure. Inspectors can also review the facility's history by looking at previous registration applications submitted to the DEC. These documents are all available on DEC's digital file repository, DEC Docs.

Prepping the PBS Inspection Form

Inspectors are strongly advised to ready the tablet for the inspection, to minimize the time spent on the site visit.

Inspectors should check that they have the latest version of the PBS Inspection Form (Form), which is updated daily to include the most current registration data that can be used to automatically answer – or prefill – registration questions. These include:

- facility-based questions, when the facility PBS number is filled (under *Facility Information*); and
- tank-based registration questions, when both the PBS number and the tank ID number are both entered, respectively (under *Facility Information* and *Tank System Information*).

After answering as many of the questions as they can, the inspector can save the inspection/survey as a draft. All saved, unsubmitted inspections will be visible in the *Drafts* folder, differentiated by PBS number and accessible to the inspector later.

What to Bring

Personal Protective Equipment

Proper personal protective equipment (PPE) varies from site to site, but for sites storing petroleum, it is generally a good idea to bring:

- steel-toed boots;
- nitrile gloves (chemical-resistant gloves optional);
- safety glasses (chemical-resistant goggles optional);
- hard hat;
- safety/high-visibility vest; and
- ear plugs.

Tools and Other Equipment

Below is a list of tools and equipment that an inspector should have with them during the inspection:

- Tablet with electronic copies of the PBS:
    - Inspection Form
    - Inspection Guidebook (DER-25)
    - Regulations
- Measuring tape to check tank system equipment dimensions
- Explosion-proof flashlight for looking into sumps and spill buckets
- Handheld mirror to check beneath aboveground tanks, dispensers, and exposed piping
- Rags to clean equipment or wipe hands
- Petroleum- and water-specific sorbent pads to determine the presence of petroleum in an unknown liquid
- Tools necessary to remove manhole covers to tank-top sumps (e.g., pry-bars, manhole hooks, etc.)
- Small broom and/or hand shovel to clean manholes/rims
- Assorted hand tools such as screwdrivers, wrenches, and a socket set
- Dispenser keys (inspectors should always let the tank system owner/operator know that they are opening dispensers during the inspection)
- Traffic cones (and DEC truck) to cordon off sections of the facility being inspected, especially at high-traffic facilities

DEC inspectors should also bring their NYS employee ID; contract inspectors should bring a copy of the inspection notification letter with them.

Site Visit

Inspectors differ in their approach but having a sense of consistency in the way inspections are performed – and the Form is completed – ensures that the regulated community is treated equally under the regulations.

The PBS Inspection Form

The Form has multiple sections, each pertaining to (and containing) different topics:

- ***Facility Registration***
  - *Facility Information (FAC):* facility's physical address and operational status
  - *Facility Location (FAC):* facility's geographical location (i.e., latitude/longitude data) and exterior
  - *Mail Contact (MC):* person/party who responds to letters/notices/inquiries regarding the facility
- ***Inspection-Specific Questions***
  - *Inspection Information (INSP):* circumstances and comments regarding the inspection
  - *Facility Representative (REP):* person who accompanied the inspector during the site visit
- ***Site-Specific Questions***
  - *Registration (REG)*
  - *As-Built Diagram (AB)*
  - *Financial Responsibility (FR)*
- ***Tank-Specific Questions***
  - *Tank System Information (TANK/PIPE/DISP):* tank system information/registration data
  - *Out-of-Service (OOS) Status and Permanent Closure (OC)*
  - *Tank System: Design/Construction, Installation, Compatibility, Repair (TS)*
  - *Operator Training (OT)*
  - *Walkthrough Inspections (WT)*
  - *Leak Detection (LD)*
  - *Secondary Containment (SC)*
  - *Corrosion Protection (CP)*
  - *Color Code and (Tank) Label (CL)*
  - *Fill Port Catch Basin (CB)*
  - *Overfill Prevention (OP)*
  - *Valves (VL)*
- ***Spills Observed (SP)***

Codes assigned to each topic are identified in the parentheses above (e.g., VL for Valves). Inspectors should familiarize themselves with these different topics, as well as the common question/response types within.

Note: *the PBS Inspection Form is primarily electronic, but an analog version is available for reference at https://dec.ny.gov/sites/default/files/2025-03/pbsinspectionform.pdf.*

Question Names

Questions in the Inspection Form are assigned unique "names" (instead of question numbers) designed to identify a question immediately without having to know its exact wording. Question names consist of two parts and are formatted like "XXX_aaa":

- the first part (XXX) is a code unique to the overarching topic (to which the question belongs); and
- the second part (aaa) is a code unique to that general type of question.

Topic codes are specified in the previous section of this document, while general question codes are listed in the next section.

Standard Inspection Questions/Responses

Most questions in the Form are standardized – and presented in a specific order – to help inform an inspector's line of questioning: violations observed under a prior question are likely to (though not always) make subsequent questions irrelevant.

The first few questions pertain to the primary method(s) or equipment required for the topic, and covers its presence (or absence, especially on the registration), validity/applicability, (proper) installation, and condition.

- **pre** – Is the required equipment **present**?
    - For topics where facilities are prone to registration discrepancies (e.g., Leak Detection), **pre** is replaced with three questions:
        - **rc** (or **_rc**) – [**Registration Check**] XXX Equipment/Method(s): select all XXX equipment/methods that apply to the tank/piping/tank system, including those required, and any supplementary equipment.
        - **ri** (or **_ri**) – [**Registration Information**] Is the registered XXX equipment/method(s) accurate?
        - **nov** – Which XXX equipment/method(s) should be noted in the **NOV**?
            - The Notice of Violation features a section that lists all discrepancies noted under this question type as corrections that the facility must make in eRegistration.
- **val** – Is the method/equipment **valid** for the tank system?
    - For Leak Detection (LD), **val** is followed by three additional questions:
        - **ld** – Is the **LD method** being performed periodically?
        - **ldr** – Are the **LD records** being **retained**?
        - **ldc** – Was the [**LD**] inspection/testing/monitoring **complete/adequate**?
- **gwo** – Is the equipment in **good working order**?

The next three questions pertain to the periodic "checkup" requirement (i.e., inspection, testing, monitoring, etc.) that applies to the method/equipment.

- **itm** – Is the equipment being **inspected/tested/monitored** periodically?
- **rec –** Are the inspection/testing/monitoring **records** being retained?
- **com** – Was the inspection/testing/monitoring **complete/adequate**?

The next question was designed to capture any violations that do not fall under any of the previous questions.

- **mis** – Are there any other observed [**miscellaneous**] violations?

The last question is the picture field.

- **pic** – **Picture(s):** [of the method/equipment]

Similarly, some responses are commonly found under different questions:

- **Y** – **Yes**
- **XP** (or **XP_**) – _____ not required [i.e., **exempted** due to **practicality**]
- **XT** (or **XT_**) – _____ not required [i.e., **exempted** due to **technicality**]
- **SM** (or **SM_**) – [LD method] used as a **supplementary (tank/piping)** LD method
- **NV** (or **NV_**) – [LD method] **not valid** for the tank/piping (and no other valid LD method in use)
- **O** (or **_O**) – XXX equipment **inoperable**
- **NX** – **No access** to [equipment/facility]
- **NR** (or **NR_**) – **No _____ records**/Records not retained

Filling out the Inspection Form

The PBS Inspection Form is the official record of an inspection and as such, should be properly utilized. Inspectors should keep the following in mind when filling out the Form:

- To open a prefilled inspection from the *Drafts* folder, users can tap "PBS Insp. Form v.7 – Final" (from *My Survey123*), then on *Drafts*; the correct inspection/survey should be labeled with the facility PBS number.
    - If the facility has never been registered (and an inspection cannot be prefilled due to a lack of registration data), the user can tap *Collect* – instead of *Drafts* – to bring up a blank inspection.
- The Form, due to logistical constraints, does not include every potential violation of the PBS regulations. It is ultimately up to the inspector to properly enforce all aspects of the regulations – the Form is merely an organizational tool to aid in the identification of major and/or commonly found violations.
    - Comments and obscure (or previously unobserved) violations should be listed on the second page of the Form (under **INSP_comm**).
        - The NOV can then manually be modified to include these violations.
    - Specific *Registration* questions were created for *Operator Training*, *Leak Detection*, *Secondary Containment*, and *Overfill Prevention* (i.e., **OT_d**, XXX**_rc**, XXX**_ri**, XXX**_nov**); registration discrepancies under other topics should be:
        - captured under **REG_info** (i.e., Response **IN**);
        - corrected in *Facility Information* (for site-specific issues) or *Tank System Information* (for tank-specific issues); and
        - specified in **INSP_comm** (i.e., "Tank NN: _____ should be _____").
- Not every question on the Form will be applicable to every facility/tank. To make the site visit more efficient, the Form was programmed with logic designed to show or hide questions/responses based on applicability (as determined by how prior questions were answered).
    - Inspectors should strive to answer all questions shown on the Form, as appropriate.
    - This logic should not be taken as a substitute for knowing applicable regulatory requirements: this is merely intended to help inspectors focus their efforts during the site visit.
    - Issues/questions regarding the programming logic should be sent to FCS.
- Inspectors are encouraged to make it a habit of expanding or collapsing a group (as necessary) as they go through the Form; doing so ensures that only pertinent questions are visible on screen at any given time.
    - Inspectors should double-check all questions/answers within a group/topic area before moving onto the next. Questions that are not applicable should be left blank.
- Inspectors should note all violations observed during the site visit, even those corrected before the site visit ends.
- Any thoughts/comments/notes about the facility/inspection should be written while the inspector is still on site.
    - These should be written such that they can be read by others and revisited without issue.
- **For safety purposes, inspectors should not fill out the form while roaming the facility.**

Taking/Selecting Pictures in the Inspection Form

Pictures can describe more about an observation than words could, so inspectors are advised to take pictures during the inspection.

- Sufficient photographs should be taken to explain and provide evidence of violations, but extraneous pictures should not be deleted (per internal DER document retention policy).
- Pictures can be modified to better focus on a specific aspect of the photo, but all pictures should be annotated to better clarify what's been captured in the photo (especially for violations) – the picture is unclear or otherwise not readily identifiable, something in the picture is being highlighted, etc.
- Photos need not be added to picture fields as the Form is being filled out during the site visit; pictures may be added later as part of post-inspection activities.

Access to the Facility and/or Equipment Denied

Inspectors should work with facility representatives to find time reasonable for both parties, but DEC has the regulatory authority to perform a compliance inspection. Facility representatives may deny the inspector access to the facility/equipment/records (for legitimate reasons), but inspectors cannot be perennially put off by facility representatives, especially with reasonable notice to the facility.

Inspectors who are denied permission to inspect the facility are advised to schedule the follow-up inspection before leaving the facility. Subsequent denials without reasonable explanation may indicate noncompliance with the PBS regulations and may warrant the involvement of the Regional Attorney. Inspectors may also ask an Environmental Conservation Officer (ECO) to accompany them on the follow-up inspection.

Questions

INSP_acc	***Was site access granted?***
Y	» No issues were found under this question.
NX	» *613-1.4(b) / Nav. Law § 178:* Access to the facility was denied.

Post-Inspection

Wrapping Up

Inspectors should mind the following before leaving the facility:

- The inspection/survey should be reviewed for completeness.
    - Inspections/surveys cannot be submitted unless the following questions (at minimum) have been answered:

Facility Registration *> Facility Information*	***Inspection-Specific Questions*** *and Inspection Information*	***Tank-Specific Questions*** *> Tank Information*
• **FAC_pbs** • **FAC_city** • **FAC_cou** • **FAC_stat**	• **INSP_name** • **INSP_date** • **INSP_ann** • **INSP_acc**	• **TANK_id** • **TANK_loc** • **TANK_pet** • **TANK_sp** • **TANK_stat** • **PIPE_loc** • **DISP_met**

    - Any thoughts/comments/notes about the site visit should be listed under **INSP_comm** before leaving the site. (Relying on memory to answer the Form should be avoided.)
    - Missing/additional information/documentation necessary to finish the inspection should be requested as soon as possible.
        - Facilities must furnish these documents to the inspector within <u>three business days</u> after the inspection (announced or unannounced).
        - The facility and mail contact information should be reviewed for accuracy. (The latter party often oversees the curing of any observed violations.)
- Pictures of all observed violations should be reviewed – these images serve to prove/support any findings made on site.
- All spills/suspected spills observed during the inspection should have been promptly reported to the **DEC Spill Hotline (518-457-7362 or 1-800-457-7362)**, either before the site visit ends or shortly after.
- All tools/equipment used to conduct the inspection should be collected; anything borrowed from the facility representative must be returned.
- The facility representative should be debriefed on the (preliminary) results of the inspection. <u>Any violation that requires immediate attention (i.e., those that have a seven- or ten-day deadline for curative measures) should be relayed to the facility as soon as possible</u>.
    - If an inspection determination cannot be reached at the end of the site visit (due to missing or incomplete information/documentation), the inspection should be saved in the *Drafts* folder.
    - Inspectors should emphasize that their debriefing of the facility representative is not necessarily indicative of the final inspection determination. Additional violations may be found after the site visit, and the official inspection determination document is either:
        - the Results of Inspection letter (ROI – when no violations are observed); or
        - the Notice of Violation (NOV – when violations are observed).

Finalizing the Inspection

Inspection Form/Report

The inspector must complete the Form to determine whether violations were present at the facility, based on all pictures, documentation, and pertinent information they gathered about the facility, as well as the observations they made during the site visit. When they have made the determination (but before the inspection is submitted), the inspector must fill in either[3] the Case Closed Date (under **INSP_cc**) or the NOV (Notice of Violation) date (under **INSP_nov**), depending on whether violations were observed.

Within 30 calendar days after the date of the site visit, the completed inspection/survey should be submitted – to do so, the inspector must:

- ensure that the device has an internet connection;
- navigate to page 5 of the Form (*Spills Observed*); then
- tap on the lower right side of the screen. A window will then appear. Tap "*Send now*."

The inspection will then be sent to the ArcGIS Online (AGOL) cloud; an automated batch upload will then send all inspections (submitted within the day) from AGOL to UIS by the following morning. After the inspection is submitted, the final inspection log must be generated and uploaded to DEC Docs, DEC's digital file repository.

Results of Inspection (ROI) and Notice of Violation (NOV)

Data in the completed Inspection Form is used to generate either a Results of Inspection letter (ROI) or a Notice of Violation (NOV):

- Facilities without any noted violations receive an ROI, proof that the inspection was performed but no violations were found.
- Facilities with observed violations receive an NOV, which serves as both a record of the inspection and a written notice that violations were indeed found.
    - The NOV has pre-written language containing:
        - a general description of each observed violation;
        - the minimum curative measure(s) the tank owner/operator is required to perform;
        - additional documents that must be submitted as part of the curative measure; and
        - deadlines for curing each violation, relative to the NOV date.
    - NOVs are generated as Word documents, which allows an inspector to modify said language or extend the deadline(s) as appropriate.

The generated document must then be sent to the facility (mail contact) within 30 calendar days after the date of the site visit; copies must be uploaded to DEC Docs soon after.

Photo Log

Photographs taken during the inspection must be compiled in a photo log and should be annotated accordingly to describe the observation/violation pictured. Photo logs must be uploaded to DEC Docs for future reference.

Following Up on Curative Measures

Inspectors should ensure that the facility keeps working to close all observed violations, particularly for those that have extended curative measures deadlines (i.e., ≥ 30 days). To mark a violation as having been corrected, the inspector must note the "compliance date" in the Corrective Measures screen in UIS. When all violations have been addressed, the inspection Case Closed Date[4] must be noted in UIS. Major or uncured violations must be referred to either the Regional or Central Office Attorney(s) for enforcement.

[3] These dates reflect when the inspector sends – or intends to send – either the Results of Inspection letter (ROI) or a Notice of Violation (NOV) to the facility mail contact.

[4] The Case Closed Date must be the same date as – or later than – the specified NOV date.

Regulatory Compliance

Pertinent Definitions

Not all properties are regulated under the PBS regulations; determining the applicability of 6 NYCRR Part 613 requires defining the following terms:

- *Petroleum/petroleum mixture*
- *Tank system*
  - *Aboveground storage tank system (AST system)*
  - *Underground storage tank system (UST system)*
- *Facility*

Petroleum/Petroleum Mixture

Petroleum[5] includes:

- crude oil[6] (and any fraction thereof);
- synthetic forms of lubricating, dielectric, insulating, hydraulic, and cutting oils;
- any complex blend of hydrocarbons not derived from crude oil; or
- any *petroleum mixture* (see below).

The term excludes the following:

- any *hazardous substance*[7], except as part of a petroleum mixture;
- animal/vegetable oils; and
- substances that are gases at standard temperature and pressure.

Petroleum mixtures[8], in turn, include any of the following:

- A mixture of:
  - crude oil (and any fraction thereof);
  - synthetic forms of lubricating, dielectric, insulating, hydraulic, and cutting oils; and/or
  - any complex blend of hydrocarbons not derived from crude oil.
- A blend of:
  - at least 1% (by volume) of:
    - crude oil (and any fraction thereof);
    - synthetic forms of lubricating, dielectric, insulating, hydraulic, and cutting oils; or
    - any complex blend of hydrocarbons not derived from crude oil;
  - less than 1% (by volume) of hazardous substances; AND
  - no hazardous waste[9].
- A blend of:
  - at least 70% (by volume) of:
    - crude oil (and any fraction thereof);
    - synthetic forms of lubricating, dielectric, insulating, hydraulic, and cutting oils; or
    - any complex blend of hydrocarbons not derived from crude oil; AND
  - one or more other substances, except any hazardous waste.

[5] Defined in 6 NYCRR subdivision 613-1.3(ba).
[6] 6 NYCRR paragraph 374-2.1(b)(26): *Used oil* means any oil that has been refined from crude oil, or any synthetic oil, that has been used, and as a result of such use, is contaminated by physical or chemical impurities. Used oil (despite having been used) is still considered to be *petroleum*, and tank systems storing it must comply with the PBS regulations (according to 6 NYCRR paragraph 374-2.3(c)(2)), even when the property does not meet the definition of *facility* (see **Facility** on p. 22).
[7] Defined in 6 NYCRR subdivision 613-1.3(af). The complete list of regulated *hazardous substances* is found in 6 NYCRR 597.3.
[8] Defined in 6 NYCRR subdivision 613-1.3(bb).
[9] Defined in 6 NYCRR Part 371.

Tank System

Petroleum is stored (in bulk) inside a *tank system*[10]. This term refers to a *stationary device*[11] that is designed to store petroleum and is constructed of non-earthen materials that provide structural support. The term includes the following:

- *Tank(s)*
- Any associated *piping*
- All *ancillary equipment*:
    - Fittings
    - Flanges
    - Valves
    - Pumps
    - Gauges
    - Alarms
    - Any other devices used to distribute, meter, or control the flow of petroleum to/from the tank
- *Fill port catch basins*
- *Containment sumps*
- *Secondary containment* (and any other containment equipment)

The term is understood to exclude the following:

- *Dispenser systems*
- *Septic tanks*
- *Surface impoundments*/pits/ponds/lagoons
- Tanks used for emergency spill/overflow containment expeditiously emptied after use
- *Stormwater/wastewater collection systems*
- *Flow-through process tank systems*
- *Liquid traps* or associated *gathering lines* directly related to oil/gas production and gathering operations

Aboveground/Underground Storage Tank Systems (AST/UST Systems)

There are two types of tank systems based on location. *Underground storage tank (UST) system*[12] refers to any tank system with at least 10% of its volume either beneath the ground surface or covered by materials (e.g., backfill, concrete encasement, etc.). This term excludes:

- Any tank system situated in an *accessible area* which allows for a physical inspection of the entire tank exterior. (This includes, among others, rooms/basements, cellars, shafts, and vaults.)
- Any tank system where the tank is completely above the ground surface AND is:
    - fully enclosed within prefabricated secondary containment (e.g., Convault, Armorcast tanks); or
    - insulated to store heated petroleum (e.g., asphaltic emulsion).

Aboveground storage tank (AST) system[13] is simply any tank system that is not a *UST system.*

[10] Defined in 6 NYCRR subdivision 613-1.3(bt).
[11] 6 NYCRR subdivision 613-1.3(bm): *Stationary device* means a device that is not mobile; tank systems that are fixed or permanently in place on foundations/racks/cradles/stilts are considered stationary.
[12] Defined in 6 NYCRR subdivision 613-1.3(bz).
[13] Defined in 6 NYCRR subdivision 613-1.3(a).

Regulated and Unregulated AST Systems

Some facilities have certain AST systems – primarily those with mobile tanks – that may or may not be regulated (and included in the PBS registration); to this end, the following flowchart[14] was created to help determine which AST systems at a facility are regulated.

Is the AST:

On site (or intended to be on site) for 180 calendar days or less[15]?

→ Yes → Unregulated

→ No → Attached to a permanent structure (that holds it down)?

→ Yes → Regulated

→ No → Affixed to external equipment that is permanently in place[16]?

→ Yes → Regulated

→ No → Designed or intended to stay in place?

→ Yes → Regulated

→ No → Unregulated

Any questions regarding this flowchart should be sent to DEC's Division of Environmental Remediation (DER), Bureau of Technical Support (BTS), Facility Compliance Section (FCS) (derweb@dec.ny.gov).

Facility

Properties that have regulated AST or UST systems on site are (PBS) *facilities*[17]. This term refers to either a single property or a contiguous/adjacent set of properties – used for a common purpose[18] and owned/operated by the *same person(s)*[19] – located on which are:

- one or more tank systems with a combined *storage capacity*[20] greater than 1,100 gallons; or
- one UST system with a storage capacity greater than 110 gallons.

A site, to be regulated under the PBS regulations, must store *petroleum* within a *tank system* (or *tank systems*) in a configuration pursuant to the definition of *facility*.

[14] NYS Fire Code (2020) 5704.2.2: Tank vehicles – used to transport petroleum, such as tanker trucks/trailers – must not be used as stationary storage tanks, despite being deemed "regulated" by this flowchart.
[15] 6 NYCRR subdivision 613-1.3(bv): *Temporary tank system* means an aboveground tank system that is installed and intended for use on a property for no more than 180 consecutive days during any 12-month period.
[16] This includes permanent piping/plumbing, stationary dispensers, electrical conduits, etc.
[17] Defined in 6 NYCRR subdivision 613-1.3(x).
[18] 6 NYCRR subdivision 613-1.3(ca): *Used for a common purpose* means that the primary activity at the set of properties is the same.
[19] 6 NYCRR subdivision 613-1.3(az): *Person* means any individual, public or private corporation, political subdivision, government agency, municipality, co-partnership, association, firm, consortium, joint venture, interstate body, trust, estate, or any other legal entity whatsoever.
[20] 6 NYCRR subdivision 613-1.3(bn): *Storage capacity* means the total volume capacity of a tank system.

To determine if a site is a PBS *facility*, all tank systems on site should first be sorted into three mutually exclusive "bins".

Bins	***Tank Systems/Equipment***	***Are these regulated (and do they have to be on the facility registration)?***

Excluded from Facility Definition	• *operational tank system* (i.e., a tank system integral to or connected to equipment or machinery for which the petroleum in the system is used solely for operational purposes[21], such as hydraulic lift tank systems, lube oil system reservoirs, electrical cable oil reservoirs, and electrical transformers);
	• *temporary tank system* (i.e., an aboveground tank system installed and intended for use on a property for no more than 180 consecutive days during any 12-month period);
	• tank system that is part of a pipeline facility that has been constructed, acquired, or operated in accordance with a Certificate of Public Convenience and Necessity issued by the Federal Energy Regulatory Commission (FERC) pursuant to the terms of 15 U.S.C. section 717f;
	• tank system storing/containing asphalt cement[22];
	• tank system that has been permanently closed[23];
	• pipelines that enter or leave the property; or
	• *wastewater treatment tank system* (i.e., tank systems designed to receive/treat influent wastewater through physical, chemical, or biological methods, such as oil-water separators[24]) that is:
	  ○ an AST system; or
	  ○ a UST system regulated under Section 307(b) or 402 of the Clean Water Act.
		Not regulated (and do not have to be on the facility registration).

Conditionally Regulated Tank Systems	Tank system storing:
	• heating oil[25] for *on-premises consumption* that:
	  ○ is not connected to any other heating oil tank system; and
	  ○ has a storage capacity of less than 1,100 gallons; or
	• motor fuel[26] for non-commercial purposes (i.e., not for resale) that:
	  ○ is located at a *farm* or *residence*; and
	  ○ has a storage capacity of 1,100 gallons or less.
		Regulated (and must be on the facility registration) IF:
		• ***All Other Tank Systems*** on site are regulated.

All Other Tank Systems	Tank system that is NEITHER: • ***Excluded from Facility Definition***; nor • a ***Conditionally Regulated Tank System***.	Regulated (and must be on the facility registration) IF: • combined storage capacity is greater than 1,100 gallons; and/or • includes at least one UST system with a storage capacity greater than 110 gallons.

A site is considered a PBS *facility* if there are regulated tank systems in the third bin (***All Other Tank Systems***), and the corresponding facility registration must include all tank systems in both the second bin (***Conditionally Regulated Tank Systems***) and the third bin. There is only one exemption to this rule: *tank systems* storing used oil must comply with the PBS regulations, and sites with such tank systems are treated (and must be registered) as *facilities* even when the site does not meet the definition of *facility*.[27]

[21] 6 NYCRR subdivision 613-1.3(aw): "Operational purposes" means that the petroleum is not consumed in any context (e.g., not combusted as fuel; not used as a raw material in a manufacturing process).
[22] Tank systems storing asphaltic emulsions are included in the term *facility*.
[23] Tanks must have been closed accordance with one of the following (as applicable – see **Subparts** on p. 25): 6 NYCRR subdivision 613-2.6(b), 3.5(b), 4.5(b), or 5.5(b).
[24] Tanks storing oily effluent from oil-water separators may be included in the definition of *facility*: if the tank is separate and distinct from the oil-water separator, said tank is regulated but not the oil-water separator.
[25] 6 NYCRR subdivision 613-1.3(ah): *Heating oil* includes technical grades of fuel oil and other residual fuel oils, but it can also refer to other forms of petroleum (e.g., used oil, off-road diesel) when used exclusively for on-premises consumption in heating equipment/boilers/furnaces (but not generators).
[26] 6 NYCRR subdivision 613-1.3(as): *Motor fuel* means petroleum that is typically used in the operation of a motor engine, such as motor gasoline, aviation gasoline, jet fuel, or No. 1 or No. 2 diesel fuel.
[27] 6 NYCRR paragraph 374-2.3(c)(2): sites that have tank systems storing used oil but do not meet the definition of *facility*, must be registered with the DEC. However, other tank systems on site (i.e., not storing used oil) do not have to be included on the registration.

Issues

- **Asphalt and Asphaltic Emulsions**

  Asphalt by itself is considered to be *petroleum* but tank systems storing it are excluded from the definition of (PBS) *facility*. Any asphalt, however, that either is reduced/blended or contains an additive which would make it liquid/prevent it from solidifying before it can enter the environment (i.e., asphaltic emulsions), is regulated as petroleum under DEC (and EPA) regulations. This includes, but is not limited to, cutback asphalt and asphaltic emulsions.

- **Mutual Exclusivity of the PBS and CBS Programs**

  The definitions of *petroleum* (regulated under the PBS program) and *hazardous substance* (regulated under the CBS program) are mutually exclusive such that a tank system is regulated under a single Bulk Storage program: PBS or CBS. A facility, however, can have tanks which make it both a PBS and a CBS facility: in this case, tank systems storing petroleum must comply only with PBS regulations, and tank systems storing hazardous substances must comply only with CBS regulations. This facility must also comply with all general facility requirements found in both sets of regulations.

- **Compartmented Tanks, Siphoned Tanks, and Tanks with Manifolded Piping**

  Each compartment in a compartmented tank is treated under the PBS regulations as a separate tank because petroleum levels in these compartments do not equilibrate or interact in any way; however, each compartment is part of the same tank system as each compartment fits within the same shell.

  Siphoned tanks (i.e., tanks connected via piping that acts as a siphon) are treated as a single tank as petroleum levels in siphoned tanks equilibrate; such tanks therefore are part of the same tank system. (However, most regulatory requirements apply to each of these tanks separately.)

  Conversely, tanks with manifolded piping (i.e., tanks with piping connected downstream of their respective submersible pumps, supplying a single combined pipe) generally behave like independent tanks: the tank volumes are not combined when in the tanks, and a failure in either tank will not affect the amount of product in the other tank. Such tanks are considered to be part of different tank systems.

- **Concrete-Encased/Wrapped Tanks**

  A tank is to be considered underground when 10% or more of its volume is covered in materials. This distinction is important because it highlights the risk that accompanies tanks whose exteriors are not readily visible to an onlooker; underground tanks, by virtue of being covered in materials, carry a higher risk because of the difficulty of tracking leaks before they enter the environment.

  Tanks with prefabricated secondary containment are an exception to the rule above. Such tanks (e.g., Convault, Armorcast tanks) rest on the ground and have an outer layer of concrete (outside the professionally designed/constructed secondary containment) to prevent structural damage to the tank in emergency situations. These tanks are considered aboveground tanks under the PBS regulations because they provide the tank operator with the ability to monitor the required portions of the tank.

  Tanks with concrete encasements applied to the tank in the field, however, are still considered underground tanks (despite the inclusion of weep holes), primarily because the tank is often not fully encased on all sides – spills from the bottom of the tank could reach the lands and/or waters of the State (i.e., become releases) without the knowledge of the tank operator. Such encasements also are not designed/installed to any uniform standard (with which prefabricated secondary containment comply).

Applicability of the PBS Regulations

Subparts

Not all of the PBS regulations apply to a regulated facility. The PBS regulations are divided into Subparts, each of which apply to a regulated tank system based on the following factors:

- *Location* – AST systems and UST systems have different requirements. The type of property the facility is on (e.g., residence, farm, gas station) also affects which Subpart applies to a tank system.
- *Contents/Use* – Type/use of stored petroleum may subject the tank system to different requirements.
- *Storage capacity* – Some requirements vary based on the capacity of the tank system.

Technical requirements for tank systems are specified in Subparts 2, 3, 4, and 5 of the PBS regulations (abbreviated as SP2, SP3, SP4, and SP5) based on the factors above. These four Subparts are mutually exclusive: requirements may be shared between the different Subparts, but a tank system will only ever be subject to the requirements of one Subpart.

Attributes	***SP2 Tank Systems***	***SP3 Tank Systems***	***SP4 Tank Systems***	***SP5 Tank Systems***
Enforcing Agency	DEC and EPA	DEC		DEC and EPA
Covered Tank Systems	UST system that is not an SP3 or SP5 tank system. These are typically UST systems storing forms of petroleum considered to be high-risk (e.g., motor fuels, lube/cutting oils, used oil) and/or intended for resale at a commercial facility.	UST system that is not a SP5 hydrant system, and: • contains *heating oil*[25] used (exclusively) for on-premises consumption; • has a *storage capacity*[20] of 1,100 gallons or less AND stores motor fuel for non-commercial purposes (i.e., not for resale) at a farm or residence; or • is part of an emergency generator system at a nuclear power generation facility[28].	AST system that is not an SP5 hydrant system.	Hydrant systems[29] (AST system or UST system).
Regulatory Requirements	6 NYCRR Subpart 613-**2**	6 NYCRR Subpart 613-**3**	6 NYCRR Subpart 613-**4**	6 NYCRR Subpart 613-**5**

Subparts 1, 6, and 7 (*General Provisions*, *Delivery Prohibition*, and *Release Response and Corrective Action*, respectively) apply to all facilities regardless of the technical Subpart applicable to the tank systems on site. Subpart 8 (*Financial Responsibility*) applies to facilities with SP2 and/or SP5 UST systems.

Categories

Tank system requirements under each Subpart are further subdivided into different sections based on the constituent equipment and their respective installation dates, the thresholds for which coincide with the effective dates of the original PBS regulations (December 27, 1986) and the subsequent revision (October 11, 2015). These *Categories*[30] are defined below. Newer components tend to have stricter requirements (having been made of later technology); older components were grandfathered to meet less stringent requirements.

Categories: Installation Dates	***Cat. 1 Tank System Components***	***Cat. 2 Tank System Components***	***Cat. 3 Tank System Components***
	Before 12/27/86	From 12/27/86 through 10/11/15	After 10/11/15

[28] Such facilities are regulated by the Nuclear Regulatory Commission under 10 CFR Part 50.
[29] 6 NYCRR subdivision 613-1.3(ai): *Hydrant system* means a tank system which fuels aircraft, watercraft, or rail vehicles and operates under high pressure with large diameter piping that typically terminates into one or more hydrants (fill stands).
[30] Defined in 6 NYCRR subdivision 613-1.3(e-g).

Issues

- **Diesel vs. #2 Fuel Oil**

  Diesel and #2 fuel oil have very similar characteristics but differ particularly in compatibility and classification. Certain emergency generators can work with both, while some can only work with; in addition, diesel is generally categorized as a motor fuel, while #2 fuel oil is typically used as heating oil. This distinction determines which Subpart applies to an underground tank: diesel tank systems are typically (though not always) SP2 tank systems, while UST systems storing #2 fuel oil may be considered SP3 tank systems if consumed exclusively on site.

- **Heating Oil Used for On-Premises Consumption**

  Storage of underground heating oil does not, by itself, exempt a UST system from federal/SP2 requirements. Heating oil must be used solely for on-premises consumption for the tank system to be SP3: if any amount of the stored heating oil is used for off-premises purposes (e.g., resale, off-site fleet operations, etc.), the UST system storing the heating oil is considered a SP2 tank system.

- **Bringing Out-of-Service (OOS) Tank Systems Back into Service**

  A tank system may be brought back into service after having been legally out-of-service (OOS). A tank system, however, may not be returned to service if it is illegally OOS. These tank systems must be closed and reusing the tank – at any site – is tantamount to installing a new tank under the PBS regulations. The tank (system) must then meet – and be proven to meet – all pertinent standards/requirements for the latest Category (at the time of installation), as certified by the original tank manufacturer as being equivalent to a new tank.

- **Bringing Tank Systems that Underwent a Permanent Closure Back into Service**

  Permanent closure is a one-way street. Permanently closed tank systems may not be brought back into service (like legally out-of-service tank systems), as these are considered to have exited the scope of the PBS regulations. Reusing such tanks – at any location to store petroleum – means re-entering the scope of the PBS regulations as new installations AND meeting all pertinent standards/requirements for the latest Category before use. To this end, facilities can obtain a recertification from either the original tank manufacturer (for shop-fabricated tanks), or from the professional engineer[31] (PE) in charge of rebuilding and/or modifying the tank (for field-fabricated tanks).

- **Using Tank Systems that Previously Stored Non-Petroleum Substances**

  Any tank system – that had never held petroleum – to be used as a PBS tank system, is considered a new installation (i.e., it enters the scope of the PBS regulations). The tank system must then meet – and be proven to meet – all pertinent standards/requirements for the latest Category (at the time it stores petroleum), as certified by the original equipment manufacturer as being equivalent to new components.

- **Changing Subpart Applicability**

  Tank systems may undergo a change (e.g., storing a different type of petroleum, increasing/decreasing the volume of the tank system covered by materials) that results in a change in applicable Subpart. Tank systems in such cases must meet – and be proven to meet – all requirements under the new Subpart prior to (or as part of) the change. (Unless the change involves a physical reinstallation or permanent closure, the tank Category does not change; however, moving the tank may invalidate the design/construction standard listing.)

[31] This PE must be licensed and registered in New York State (NYS) by the NYS Education Department under Title 8, Article 145 of the Education Law.

Registration

Purpose

Registration is required to document the existence, location, and current status of facilities/tank systems that are subject to the PBS regulations. It also serves to furnish tank system equipment information to the DEC, allowing inspectors to determine compliance (with the PBS regulations) and applicability of periodic inspection, testing, and monitoring requirements (e.g., tightness testing). Contact information for the owner/operator must also be listed on the facility registration to identify parties responsible for the facility/tank system(s).

Requirements

Regulated facilities must be registered with the DEC, and the facility owner (or their authorized representative) must always keep the registration information current and accurate. PBS certificates are issued to facilities upon successful registration, initial or otherwise; the facility owner (or their authorized representative) must verify that all information in the (latest) certificate is accurate before signing/posting it at a conspicuous location at the facility.

Initial registration must be completed for new facilities, detailing both facility information (e.g., facility/tank ownership, operators, mail correspondent, etc.) and tank system information. The PBS certificate must be obtained prior to the first receipt of petroleum into any of the newly registered tanks.

Transfer of ownership must be performed when the site ownership changes hands. To obtain an updated registration certificate, the new facility owner must submit a change-of-ownership application within 30 days after the transfer, to notify DEC of the change as well as any other pertinent changes to the registration.

Registration renewals must be performed for existing facilities every five years from the date of the last valid registration certificate, until DEC receives written notice/documentation proving that either: the site is no longer considered a facility (because some or all tank systems have been permanently closed); or the facility ownership has been transferred.

DEC must also be notified of any plans to install, close, or store a different substance in a tank system (e.g., biofuel blends above E10 or B20), at least 30 days prior to the change. (This is known as a pre-work notification). Tank system installations/closures must be reflected on the registration within 30 days after installation/permanent closure; all other changes to the registration information warrants an immediate update to ensure that the certificate is always current/accurate.

Issues

- **Unregistered Tanks/Facilities**

  Inspectors may identify unregistered tanks at a registered facility, or an unregistered facility itself, but these should be inspected like any registered tanks/facilities. (Abandoned vent pipes, unexplained piping, and physical areas similar to tank pads are often evidence of previously closed tanks that should be on the registration.)

  Inspectors should note on the Form (under **REG_info** and **INSP_comm**) all unregistered tanks at the registered facility and describe their location, storage capacity, contents, and connections as accurately as possible. Such tanks should have “UNREGX” as a placeholder under **TANK_id** (where ‘X’ is a letter or a number) and must be documented by taking pictures. The facility owner must then be instructed to update their registration – via a Notice of Violation (NOV) – to include the listed unregistered tanks; the NOV instructions can then be compared to the registration application as submitted by the facility.

  Inspectors should also follow the general procedure above for unregistered facilities, but extra precautions should be taken when inspecting abandoned unregistered facilities. Owners of unregistered facilities (abandoned or not) must also be located and instructed to register the facility through the NOV.

- **Registering Required/Supplemental Tank System Equipment/Methods**

  All tank system components must be reflected on the PBS registration – as much as the registration form allows – and must be maintained and operated in accordance with all pertinent requirements, regardless of whether the equipment meets, does not meet, or exceeds applicable regulatory requirements.

- **Facility/Tank Information Changed without Notice**

  Facilities may fail to notify DEC as required when changes occur. Inspectors should record any discrepancies regarding the facility registration either in the corresponding XXX**_rc**, XXX**_ri**, and XXX**_nov** questions, or under **REG_info** and **INSP_comm**, as appropriate. The NOV should then direct the facility owner to correct the errant registration information accordingly; the completeness of the following information correction can be gauged by comparing the listed discrepancies (in the NOV) to the submitted registration application.

- **Operational Tank Systems**

  Operational tank systems do not need to be included on the facility registration as they are not regulated under the PBS program. Inspectors should notify the facility owner that the PBS registration should be updated to remove any operational tanks.

- **Changing Octane or Additive Content**

  Changing a fuel's octane content or additive content (with the exception of ethanol or other additives which may cause compatibility issues) does not warrant an information correction; this may, however, affect the fill port color code/marking.

- **Ballast Loads Using Petroleum**

  Petroleum may only be used as a ballast load if the tank has already been registered, all tank system equipment is operational, the tank system has been tightness tested (as part of the installation requirements) AND the facility has been issued their registration certificate.

- **Petroleum Changes that Affect Applicable Regulatory Requirements**

  If a tank system is to store a different type of petroleum that will cause a change in applicable regulatory requirements (i.e., additional requirements apply), the new requirements must be met prior to (or as part of) the change. For instance, a Cat. 1 AST system storing #6 fuel oil must have a ten-year inspection before switching to #2 oil.

- **Replacing Operators**

  Class A/B Operators may cease to be the designated Operator at a given facility due to a variety of reasons (e.g., reassignment, retirement, SNC, etc.), after which the facility must designate a different Operator within 30 days; while the site registration may not be current and accurate at this time, inspectors should use their discretion in noting this violation.

Questions

REG_info	***Is the registration information current and accurate?*** ***Note: this pertains to tank system information not captured in other questions.***
Y	» No issues were found under this question.
EX	» *613-1.9(a)(3):* The facility registration is expired/has not been renewed. » *Note(s):* The expiration date of the facility's registration can be found on the registration certificate and on the DEC Bulk Storage Database. » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must renew the site registration online and submit the appropriate fee. » *Additional Action(s):* The inspector should help the facility use the fee worksheet to calculate any back fees owed dating to when the facility was required to be registered.
IN	» *613-1.9(a)(4):* The facility registration information is inaccurate. » *Note(s):* This Response does not include expired facility registrations, outdated owner information, unregistered tanks, or unregistered facilities; such violations should be captured under Responses **EX**, **OW**, **UT**, and **UF** respectively. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must correct the site registration online. » *Additional Action(s):* The inspector should note the specific inaccuracies with the registration under Question **INSP_comm**, with the exception of those for which there are specific questions (e.g., Operator Training).
OW	» *613-1.9(c)(3)(i):* The facility underwent an ownership transfer that is not reflected in the registration. » *Note(s):* This Response does not include facilities with expired registrations, which should be captured under Response **EX** instead. However, there may be a need to cite both violations if the last registration has lapsed and the new owner has yet to register the facility. » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must register the site online and submit the appropriate fee. » *Additional Action(s):* The inspector should help the facility use the fee worksheet to calculate any back fees owed dating to when the facility was required to be registered.
UT	» *613-1.9(a)(1):* The facility is registered, but there is an unregistered tank(s) on site. » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must update the site registration online to include the unregistered tank's information. » *Additional Action(s):* The inspector should help the facility use the fee worksheet to calculate any back fees owed if the tank(s) was registered when required.
UF	» *613-1.9(a)(1):* The facility is not registered with the DEC. » *Note(s):* This Response does not include facilities with either expired registrations or outdated owner information; such violations should be captured under Responses **EX** and **OW**, respectively. » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must register the site online and submit the appropriate fee. » *Additional Action(s):* The inspector should help the facility use the fee worksheet to calculate any back fees owed dating to when the facility was required to be registered.

REG_cert	*Is the registration certificate signed/posted at a conspicuous location at the facility?*
Y	» No issues were found under this question.
ND	» *613-1.9(a)(2):* The registration certificate is not posted, or is not posted at a conspicuous location. » *Note(s):* Locked offices/backrooms or inside drawers/filing cabinets are not conspicuous locations. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must display (and submit a photograph showing) the certificate in a conspicuous location. » *Additional Action(s):* The inspector should supply the facility with a copy of their registration certificate if necessary.
NS	» *613-1.9(a)(2):* The registration certificate is posted but is not signed by the facility owner or their authorized representative. » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility owner or authorized operator must sign the certificate, and the facility must submit a photograph showing the signed certificate.

As-Built Diagram

Purpose

As-built diagrams are required for specific – and often, buried – tank system equipment to help emergency responders (i.e., firefighters and spill responders) plan their response accordingly. Knowledge of the installation, location, and orientation of these equipment helps prevent (further) disaster in emergency situations.

Requirements

An as-built plan (or site diagram) shows the location of buried tank system equipment in relation to other equipment/structures at a facility. Facilities must have and maintain accurate and updated as-built plans that include all SP2/SP3/SP5[32], Cat. 2/3 (UST system) components on site. (It is highly recommended – though not required – for as-built plans to include Cat. 1 equipment as well.) These records should be accessible on site, particularly during an emergency.

As-built plans must be maintained until the facility has been permanently closed and have the following information.

	Cat. 1 UST System Components	***Cat. 2 UST System Components***	***Cat. 3 UST System Components***

As-Built Diagram:
 	
 Required Information
 [SP2/SP3/SP5]
	No required details specified[33]	• A visible reference point (e.g., a building on site)
		• A frame of reference (i.e., North arrow)
		• Scale of the drawing
		• Location of the following:
		  ○ Underground tanks (w/ tank ID no.)
		  ○ Piping
		  ○ Fill ports
		  ○ Dispensers
		  ○ Check valves
		  ○ Transition sumps
		  ○ Monitoring/recovery wells
			The same details required for Cat. 2 UST system components, PLUS:
			
			• Physical dimensions of each UST
			• Installation date for piping

The next page features an example of an acceptable as-built plan; it depicts two SP2, Cat. 2 UST systems with added information that is not strictly required for Cat. 2 – but is required for Cat. 3 – tank system components.

Issues

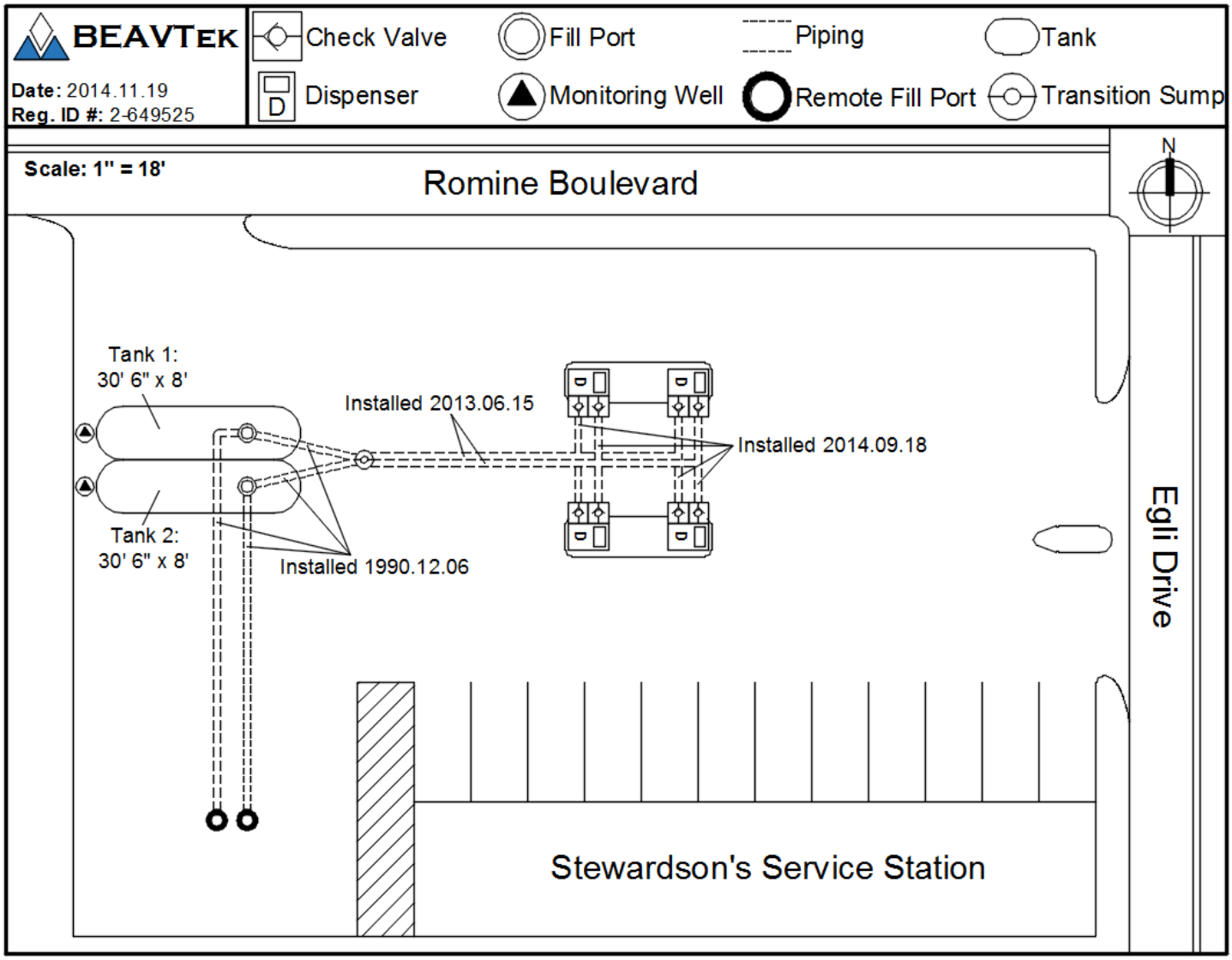
- **As-Built Plan Format**

  There are no restrictions on how the site diagram is formatted, as long as it has all of the required contents (and is legible); as such, the as-built plan can be either a hand-drawn or a computer-generated diagram, and/or have aerial/satellite images overlaid onto the diagram.

- **Aboveground tank associated with a SP5 UST system**

  Hydrant systems are designed to be modular and will often feature aboveground and underground tanks as part of the same tank system. Aboveground tanks associated with SP5 UST systems are not required to be on the as-built diagram, though their inclusion is strongly recommended as visible reference points on site.

[32] As-built plan requirements are found in 6 NYCRR subdivisions 613-2.2(b), 3.2(b) and 5.2(b).
[33] Cat. 1 UST systems were not required to follow any as-built diagram requirements to avoid retroactive imposition of then-new requirements.



Questions

AB_dia	***Does the facility have a complete/accurate as-built diagram?***
Y	» No issues were found under this question.
IN ***[SP2/SP3/SP5]***	» *613-2.2(b) / 3.2(b) / 5.2(b):* The as-built diagram is incomplete, or does not clearly indicate all required information. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must update (and submit a copy of) the as-built diagram to meet all requirements. » *Additional Action(s):* The inspector should note the specific inadequacies of the as-built plan under Question **AB_comm**.
ND ***[SP2/SP3/SP5]***	» *613-2.2(b) / 3.2(b) / 5.2(b):* The as-built diagram is not being kept, or the diagram is not being retained until all Cat. 2 and 3 UST systems at the facility undergo permanent closure/change-in-service. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must have a qualified person create (and submit a copy of) an as-built diagram which meets all requirements.
XT ***[SP2/SP3/SP5]***	» An as-built diagram is not required because the facility does not have any SP2/SP3/SP5, Cat. 2/3 UST system components.
AB_comm	***What's missing from/inaccurate about the diagram?***

Financial Responsibility

Purpose

Financial responsibility (FR) requires facilities to demonstrate that they have the financial means necessary to pay for all corrective actions in case of a spill, including spill cleanup and compensation for any affected parties. this ensures a timely response to the spill which in turn keeps the spill from growing.

Requirements

Owners/operators of SP2/SP5 UST systems are subject to the FR requirements[34], except for the following:

- Tank system owners/operators of:
  - UST systems with a maximum storage capacity of 110 gallons
  - Wastewater treatment tank systems
- State/federal government entities whose debts/liabilities belong to either a state or the United States

Both the owner and the operator may be equally liable[35] for the costs of a spill (should it occur), though only either one must maintain proof of financial responsibility. The following mechanisms may be obtained (depending on the type of liable party) to comply with FR requirements.

	Type of Liable Party	
	Local Government	***Private Party***
Financial Responsibility: ***Acceptable Mechanisms***	• Financial test of self-insurance[36] • Guarantee • Insurance and risk retention group coverage • Surety bond • Letter of credit • Trust fund • Standby trust fund	
	Local Government: • Bond rating test • Financial test • Guarantee • Fund	

One or more mechanisms may be used to establish financial responsibility, but all (non-exempt) SP2/SP5 UST systems on site must be covered by a mechanism. Mechanisms must also have continuous coverage (i.e., be regularly renewed such that there is no lapse in coverage), and demonstrate the ability to pay for the costs of the following in the event of a spill:

- Spill cleanup and free product removal/disposal
- Correcting environmental damage
- Providing clean drinking water
- Compensating third parties for property damage and bodily injury

[34] 6 NYCRR subdivision 613-8.1(a): Owners/operators of UST systems are subject to financial responsibility requirements.
[35] The NYS Navigation Law may also hold the facility owner liable for any spills that occur at a facility.
[36] Financial tests of self-insurance, when used with a guarantee, are acceptable if the tank owner/operator's financial statements are separate from the guarantor's financial statements.

Mechanisms must have the following minimum per-occurrence and (annual) aggregate coverages for the facility depending on last (calendar) year's average monthly throughput and the number of SP2/SP5 UST systems under the same ownership:

Required Minimum Per-Occurrence Coverage *(i.e., maximum amount the insurer will pay in the event of a claim/spill)*	***Facility's Average Monthly Throughput*** ***(Based on the Previous Calendar Year)***	
	≤ 10,000 gal	***> 10,000 gal***
	$500,000	$1,000,000
Required Minimum (Annual) Aggregate Coverage *(i.e., maximum amount the insurer will pay for claims/spills in a year)*	***Number of SP2/SP5 UST Systems Under the Same Ownership***	
	≤ 100 UST Systems	***> 100 UST Systems***
	$1,000,000	$2,000,000

If multiple mechanisms are used for a facility, the sum of the individual coverages (from each mechanism) must equal (or exceed) the required minimum coverage.

FR mechanisms must be updated immediately to reflect any changes and must be maintained until the covered tank system(s) has undergone permanent closure (and any necessary corrective actions have been completed)[37]. All mechanisms must also be accompanied by the Certificate of Financial Responsibility (worded as follows) and generally have the following information.

	Certificate of Financial Responsibility	***FR Mechanism***

Financial Responsibility Records:
 	
Certificate of Financial Responsibility Format and Required General Information
	Certification of Financial Responsibility
	
	[Tank system owner or operator] hereby certifies that it is in compliance with the requirements of 6 NYCRR Part 613-8.
	
	The financial assurance mechanism(s) used to demonstrate financial responsibility under 6 NYCRR Part 613-8 is (are) as follows:
	
	[For each mechanism, list the type of mechanism, name of issuer, mechanism number (if applicable), amount of coverage, effective period of coverage and whether the mechanism covers "taking corrective action" and/or "compensating third parties for bodily injury and property damage caused by" either "sudden accidental releases" or "non-sudden accidental releases" or "accidental releases."]
	
	[Signature of tank system owner or operator]
	
	[Name of tank system owner or operator]
	
	[Title]
	
	[Date]
	
	[Signature of witness or notary]
	
	[Name of witness or notary]
	
	[Date]
		• Facility information (i.e., PBS number, site address)
		• Liable party information (i.e., name, contact information, company affiliation) for the tank owner and/or operator
		• Type of financial responsibility mechanism used
		• Date the mechanism was created
		• Coverage of the mechanism:
		  ○ Tank ID numbers
		  ○ Effective dates (i.e., start/end dates)
		  ○ Minimum coverages:
		  ▪ Per-occurrence amount
		  ▪ (Annual) Aggregate amount
		  ○ A statement that the mechanism covers the following costs:
		  ▪ Spill cleanup and free product removal/disposal
		  ▪ Correcting environmental damage
		  ▪ Providing clean drinking water
		  ▪ Compensating third parties for property damage and bodily injury
		• Facility's average monthly throughput for the previous calendar year
		• Information on SP2/SP5 UST systems under the same ownership:
		  ○ Tank ID number(s)
		  ○ Facility information (i.e., PBS number if applicable, site address)
		  ○ Total number

[37] 6 NYCRR subdivision 613-8.7(b): Owners/operators of UST systems are no longer required to maintain financial responsibility after the tank has been permanently closed, or – if corrective action is required – after corrective action has been completed and the tank has been permanently closed.

Mechanisms must also include copies of the following specific[38] documents:

Mechanism	Required Information/Accompanying Documentation
Financial Test of Self-Insurance *161*	Chief Financial Officer's (CFO) letter based on year-end financial statements (for the most recent completed financial reporting year)[39], with specific wording[40]
Guarantee* *163*	• Guarantee with specific wording[40] • CFO's letter based on year-end financial statements (for the most recent completed financial reporting year)[39], with specific wording[40] (per Financial Test of Self-Insurance; see above) • Signed standby trust fund agreement (and copies of any amendments to the agreement) with specific wording[40] (per Standby Trust Fund; see below) • Formal certification of acknowledgement with specific wording[40] (per Standby Trust Fund; see below)

Insurance and Risk Retention Group Coverage *167*	• Signed insurance/risk retention group coverage policy (and any amendments to the agreement)
	• Either:
	  ○ Endorsement (amending the policy), with specific wording[40]; or
	  ○ Certificate of insurance, with specific wording[40].

Surety Bond* *171* ***Letter of Credit*** *175*	• Mechanism with specific wording[40] • Signed standby trust fund agreement (and copies of any amendments to the agreement) with specific wording[40] (per Standby Trust Fund; see below) • Formal certification of acknowledgement with specific wording[40] (per Standby Trust Fund; see below)
Trust Fund *177* ***Standby Trust Fund*** *177*	• Signed trust agreement (and copies of any amendments to the agreement) with specific wording[40] • Formal certification of acknowledgement, with specific wording[40]
Local Government Bond Rating Test *184*	• Local government bond rating published within the last 12 months by Moody's or Standard & Poor's • CFO and/or guarantor's letter demonstrating that the owner/operator meets the local government bond rating test, with specific wording[40]
Local Government Financial Test *187*	CFO's letter based on year-end financial statements (for the most recent completed financial reporting year)[39], with specific wording[40]

Local Government Guarantee *194*	• Guarantee with specific wording[40]
	• Signed standby trust fund agreement (and copies of any amendments to the agreement), with specific wording[40]
	• *IF guarantor relies on local government bond rating test to demonstrate financial responsibility:*
	  ○ Local government bond rating published within the last 12 months by Moody's or Standard & Poor's (per Local Government Bond Rating Test; see above)
	  ○ CFO and/or guarantor's letter demonstrating that the owner/operator meets the local government bond rating test and supporting use of the bond rating test, with specific wording[40] (per Local Government Bond Rating Test; see above)
	• *IF mechanism is supported by a local government financial test:*
	CFO's letter based on year-end financial statements (for the most recent completed financial reporting year)[39], with specific wording (per Local Government Financial Test; see above)
	• *IF mechanism is supported by a local government fund:*
	Guarantor's year-end financial statements (for the most recent completed financial reporting year) showing the amount of the fund

Local Government Fund *205*	• CFO and/or guarantor's letter demonstrating that the owner/operator meets the requirements of the local government fund, with specific wording[40]
	• State constitutional provision or local government statute, charter, ordinance, or order dedicating the fund
	• Year-end financial statements (for the most recent completed financial reporting year) showing the amount in the fund
	  ○ IF the fund is established with incremental funding (i.e., annually for 7 years until fully funded) backed by bonding authority, the financial statement must also include:
	  ▪ previous year's balance;
	  ▪ amount of funding during the year;
	  ▪ closing balance in the fund; and
	  ▪ documentation of the required bonding authority – either:
	  • results of a voter referendum; or
	  • attestation by the State Attorney General.

Subscripts after mechanism names indicate corresponding page numbers on the PDF version of Part 613 (https://dec.ny.gov/sites/default/files/2024-01/part613.pdf).

[38] See 6 NYCRR Subpart 613-8 for information on other financial responsibility requirements not discussed in this section.
[39] CFO's letter must be on file no later than 120 days after the close of the financial reporting year.
[40] See 6 NYCRR subdivision 613-8.4(d) for required mechanism-specific wording.

Issues

- **The NYS Oil Spill Fund**

  DEC originally petitioned EPA in 1993 to consider the Spill Fund as an FR mechanism, at least until facilities obtain alternative, long-term mechanisms (e.g., insurance). EPA granted the request, with the caveat that it is not an acceptable standalone mechanism as it does not cover costs of third-party bodily injury; this meant that facilities relying on the Spill Fund for financial responsibility must have also had a supplementary mechanism solely for third-party bodily injury.

  DEC then rescinded this request upon adoption of the FR requirements in Part 613, effective October 17, 2023. This reverts the Spill Fund to its original purpose as a contingency fund to address any spill where the spiller is unknown, unwilling, or unable to pay for corrective actions.

- **Guarantees and Surety Bonds as Financial Responsibility Mechanisms**

  Guarantees and surety bonds are not acceptable forms of financial responsibility, pending a decision from the NYS Attorney General's Office that they are legally valid and enforceable obligations in NYS.

Questions

FR_ap	***Does Financial Responsibility apply to this facility?***
Y	» No issues were found under this question.
XTO ***[SP2/SP5]***	» Financial Responsibility does not apply to the facility because the tank system owner(s) and/or operator(s) is exempted from the Financial Responsibility requirements.
XTU ***[SP3/SP4/SP5]***	» Financial Responsibility does not apply to the facility because there are no federally regulated UST systems on site.
FR_mech	***Which FR mechanism(s) does the facility use AND is it being retained?*** ***Note: mechanisms must be retained until the USTs covered by the mechanism are permanently closed (and any necessary corrective action have been completed).***
FT	» Financial test of self-insurance
G	» Guarantee
IN	» Insurance and risk retention group coverage
SB	» Surety bond
LC	» Letter of credit
TF	» Trust fund
STF	» Standby trust fund
LGBRT	» Local government bond rating test
LGFT	» Local government financial test***
LGG	» Local government guarantee
LGF	» Local government fund
NV ***[SP2/SP5]***	» *613-8.4(a):* The financial responsibility mechanism(s) is not valid in NYS. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must obtain (and submit a copy of) an FR mechanism that is acceptable in NYS to cover the SP2/SP5 UST systems on site.
NR ***[SP2/SP5]***	» *613-8.6(a):* The facility does not have a financial responsibility mechanism, or the mechanism is not being retained until all federally regulated UST systems on site have been permanently closed. » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must either submit a copy of the FR mechanism, or demonstrate financial responsibility (and submit a copy of the FR mechanism within 30 calendar days after the date of the NOV).

FR_t	***Are all required USTs on site covered by an FR mechanism?***
Y	» No issues were found under this question.
C [SP2/SP5]	» *613-8.1(a):* The financial responsibility mechanism(s) does not cover all federally regulated UST systems at the facility. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either replace/update the FR mechanism to include all SP2/SP5 UST systems on site or obtain (and submit a copy of) a separate FR mechanism to cover the remaining SP2/SP5 UST systems.
FR_cont	***Does the FR mechanism have continuous coverage?***
Y	» No issues were found under this question.
GAP [SP2/SP5]	» *613-8.4(e)(1):* The financial responsibility mechanism did not have continuous coverage of all federally regulated UST systems at the facility. » *Note(s):* Failure to maintain continuous FR coverage is a violation without a (direct) curative measure; however, it should still be noted as a violation.
FR_clau	***Does the FR mechanism cover all clauses?***
Y	» No issues were found under this question.
CA [SP2/SP5]	» *613-8.3(a) / 8.3(b) / 8.3(d)(1):* The financial responsibility mechanism does not cover corrective action for accidental releases. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either replace/update the FR mechanism to cover corrective action or obtain (and submit a copy of) a separate FR mechanism to cover corrective action.
BI [SP2/SP5]	» *613-8.3(a) / 8.3(b) / 8.3(d)(2) – (3):* The financial responsibility mechanism does not cover third-party bodily injury caused by accidental releases. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either replace/update the FR mechanism to cover third-party bodily injury or obtain (and submit a copy of) a separate FR mechanism to cover third-party bodily injury.
PD [SP2/SP5]	» *613-8.3(a) / 8.3(b) / 8.3(d)(2) – (3):* The financial responsibility mechanism does not cover third-party property damage caused by accidental releases. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either replace/update the FR mechanism to cover third-party property damage or obtain (and submit a copy of) a separate FR mechanism to cover third-party property damage.
FR_min	***Does the FR mechanism have appropriate minimum amounts?***
Y	» No issues were found under this question.
PO [SP2/SP5]	» *613-8.3(a):* The financial responsibility mechanism does not have a sufficient per-occurrence amount. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either replace/update the FR mechanism to have the correct per-occurrence amount or obtain (and submit a copy of) a separate FR mechanism to supplement the per-occurrence amount.
AA [SP2/SP5]	» *613-8.3(b):* The financial responsibility mechanism does not have a sufficient annual aggregate amount. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either replace/update the FR mechanism to have the correct annual aggregate amount or obtain (and submit a copy of) a separate FR mechanism to supplement the annual aggregate amount.

FR_com	*Is the FR mechanism complete/accurate?*
Y	» No issues were found under this question.
NC ***[SP2/SP5]***	» *613-8.6(b)(10)(i):* The Certification of Financial Responsibility does not accompany the financial responsibility mechanism(s). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must provide (and submit a copy of) the Certification of Financial Responsibility.
CA ***[SP2/SP5]***	» *613-8.6(b)(10)(i) – (ii):* The Certification of Financial Responsibility is either outdated/inaccurate or otherwise does not meet applicable requirements. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must correct/update (and submit a copy of) the Certification of Financial Responsibility.
RD ***[SP2/SP5]***	» *613-8.6(b)(2) – (9):* The financial responsibility mechanism does not include all required documents. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a copy of the missing documents.
BPL ***[SP2/SP5]***	» *613-8.6(b)(1):* The financial responsibility mechanism does not have the exact wording as prescribed in the regulations. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must correct/update (and submit a copy of) the FR mechanism.
OI ***[SP2/SP5]***	» *613-8.4(d):* The financial responsibility mechanism is deficient. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must obtain (and submit a copy of) an FR mechanism that is acceptable in NYS and addresses any noted inaccuracies with the previous mechanism.

Subpart 2

UST Systems Subject to Both Subtitle I and Title 10

Out-of-Service (OOS) Status and Permanent Closure

Purpose

Out-of-service requirements outline the steps that must be taken to avoid – or at least reduce – unnecessary deliveries, human error, and the resulting spills/releases from tank systems that are not in use, as well as prepare these tank systems for permanent closure if not returned to service. Similarly, permanent closure requirements establish procedures to safely inactivate tank systems, thereby minimizing the risk of (and addressing any) spills/releases that can occur – or are discovered – as they exit the PBS program. Both requirements also reduce the chances of tank abandonment and future environmental/fire safety concerns associated with the tank system.

Requirements

Tank systems are considered out of service (OOS) when:

- taken out of service (e.g., for repairs), by updating the facility registration; or
- no longer receiving or dispensing petroleum.

Facilities that have a tank system out of service for extended periods of time must do the following within the specified timeframes (relative to the date the tank system is rendered out-of-service)[41].

Timeframe	*Actions That Must Be Taken When a SP2 UST System is OOS*

Upon the Tank System becoming OOS	*UNTIL the tank undergoes either a return to service or permanent closure:*
	Continue normal operation/maintenance and periodic inspection/testing/monitoring of:
	• cathodic protection
	• the following, UNLESS the tank is empty (i.e., the tank has less than 1 inch or 2.5 cm of petroleum):
	  ○ Overfill prevention
	  ○ Fill port catch basins and containment sumps used for interstitial monitoring
	  ○ Leak detection (except for inventory monitoring)
	  ○ Walkthrough inspections

Within 30 Days After	Update the PBS registration to reflect tank status
At 90 Days After	• Empty the tank (so that it has less than 1 inch or 2.5 cm of petroleum) if not yet emptied • Cap/secure all piping/ancillary equipment/manways (but leave vent lines open)
More than 12 Months After	Close the tank system

Tank systems may be brought back into service after having been legally OOS for 12 months or less – doing so requires:

- resuming the requirements suspended due to the tank being empty (either in accordance with the original schedule or upon return to service);
- updating the facility registration (within 30 days of the change); and
- prepping all piping, ancillary equipment, and manways, as necessary.

UST systems, however, may not be returned to service after having been OOS for more than 12 months; these tank systems must undergo permanent closure[42] and "exit" the scope of the PBS regulations.

[41] Out-of-service requirements for SP2 tank systems are found in 6 NYCRR subdivision 613-2.6(a).
[42] Permanent closure requirements for SP2 tank systems are found in 6 NYCRR subdivisions 613-2.6(b & c).

Permanent closure means undertaking: a complete tank removal; an in-place closure; or a change-in-service (i.e., the tank system is used to store a non-petroleum substance). Facilities with tank systems that undergo permanent closure must do the following within specific timeframes (relative to the closure date).

<table>
<tr><th rowspan="2">Timeframe</th><th colspan="3">Actions the Facility Must Take When a SP2 UST System Undergoes…</th></tr>
<tr><th>Tank Removal</th><th>In-Place Closure</th><th>Change-in-Service</th></tr>
<tr><td>At Least 30 Days Before</td><td colspan="3">Notify the DEC of the closure (i.e., send DEC a pre-work notification), UNLESS the closure is in response to corrective action in accordance with 6 NYCRR Subpart 613-7</td></tr>
<tr><td rowspan="3">Upon Permanent Closure</td><td colspan="2">Perform the tank removal/in-place closure in accordance with one of the following[43]:
• API RP 1604 (March 1996)
• PEI RP 1700 (2018)</td><td>Perform the change-in-service in accordance with one of the following[43]:
• API RP 1604 (March 1996)
• API RP 2015 (August 2001)
• API RP 2016 (August 2001)
• NFPA 326 (2010)
• PEI RP 1700 (2018)</td></tr>
<tr><td>• Empty/clean the tank system of liquids/sludge
• Disconnect lines/fill pipes and either:
o remove the lines; or
o cap/secure the lines</td><td>• Empty/clean the tank system of liquids/sludge/vapors
• Disconnect lines/fill pipes and either:
o remove the lines; or
o cap/secure the lines
• Fill all voids with an inert material (e.g., sand, concrete slurry) UNLESS a self-structural tank retrofit will be installed within the disused tank
• Secure all manways to prevent precipitation from seeping into the tank</td><td>Empty/clean the tank system of liquids/sludge/vapors</td></tr>
<tr><td colspan="3">• Terminate all petroleum deliveries to the tank system
• Conduct a site assessment UNLESS all of the following are met:
o there was no physical evidence that a release[44] occurred around the tank system at the time of closure;
o the tank system had vapor or groundwater monitoring as a (periodic) leak detection method; AND
o the vapor/groundwater wells indicate that no release has (ever) occurred</td></tr>
<tr><td>Within 30 Days After</td><td colspan="3">• Update the facility registration to reflect tank status
• Send DEC a copy of the closure report</td></tr>
<tr><td>Within 90 Days After</td><td colspan="3">Send DEC a copy of the site assessment report</td></tr>
</table>

[43] Facilities may also comply with a code of practice developed by a nationally recognized association or independent testing laboratory and approved by the DEC.

[44] Physical evidence includes contaminated soils/groundwater, or petroleum as a liquid or vapor.

Permanent closure records consist of both the closure report and the site assessment[45] report and must be retained for (at least) three years after closure or until the facility has been permanently closed, whichever is later. These reports must have the following information.

	Closure Report	***Site Assessment Report***

SP2 Closure Records:
 	
Required Information
	• PBS number and site address
	• Date/time of permanent closure
	• General information about the tank:
	  ○ Tank ID number
	  ○ Design capacity
	  ○ Type of petroleum (or a constituent/tracer compound) previously stored
	  ○ Tank manufacturer/model
	• Vapor/groundwater monitoring results that indicate that no release occurred, and that nullify the requirement for a site assessment during closure
	• Name of the party (i.e., person/company) who performed the closure
	• Cover letter from the party that performed the closure, indicating the following:
	  ○ History of the tank system
	  ○ Actions taken to close the tank (and the standard by which the closure was performed)
	  ○ That the tank system did undergo proper closure
	• Site diagram showing tank/piping location(s)
	• Photos taken of and notes or field observations made during closure on the following:
	  ○ Any spills found
	  ○ Failed equipment (for tank removal)
	  ○ Whether the piping was removed (or capped and secured in place, and why)
	• Invoices/job tickets for the closure
	• Bills of lading
	• Disposal manifests (for product, sludge, and rinse water pulled from the tank)
	• Tank scrap receipt or other disposal receipt (for tank removal)
	• Evidence that the tank was filled to its design capacity, with a solid inert material (for in-place closure)
	
	If spills were observed during closure, the closure report must also include the following:
	• Site diagram detailing the extent of contamination and excavation, sampling locations, etc.
	• Sampling results and comparison to standards
	• Summary of cleanup performed, including reference to any spills called in (and the spill number(s))
		• PBS number and site address
		• Tank ID number
		• Date/time of sampling
		• Type of petroleum (or a constituent/tracer compound) previously stored in the tank system
		• Density or specific gravity of petroleum previously stored in the tank
		• Name of the party (i.e., person/company) who performed the sampling
		• Specific actions that the party took in relation to the site assessment
		• Site diagram detailing sampling locations (in relation to the tank system)
		• Measured concentrations of the previously stored petroleum (or a constituent/tracer compound) per the soil/groundwater sampling
		• Results of the site assessment
		• Photos taken of/notes or field observations made during closure on the following:
		  ○ Any spills found
		  ○ Failed equipment (for tank removal)
		  ○ Groundwater conditions

Any contaminated soils/groundwater or petroleum spills observed[46] during closure/site assessment are considered releases which must be reported to the Spill Hotline within two hours after discovery; corrective action must also begin immediately in accordance with 6 NYCRR Subpart 613-7.

[45] The general concepts behind site assessments are detailed in DER-10.
[46] 6 NYCRR paragraph 2.6(c)(2): A facility must begin corrective action in accordance with 6 NYCRR Subpart 613-7 if contaminated soils/groundwater, petroleum spills, OR petroleum vapors are found during the site assessment.

Issues

- **When a Tank Is Considered OOS**

  The minimum length of time for which a tank is not dispensing or receiving petroleum to be considered OOS, is not defined; inspectors are encouraged to use their discretion when determining if the OOS requirements apply to a specific tank system. Tank systems at facilities that do not operate seven days a week (e.g., gas stations, municipal garages, etc.) are not considered OOS when the facility is closed (e.g., during the weekend), but those at facilities that cease operations seasonally (e.g., marinas during the winter season) are indeed OOS during that "closed" period.

- **Inventory Monitoring for Out-of-Service Tanks**

  Inventory monitoring is not required for out-of-service tanks, as the tank is either empty (i.e., has less than 1 inch or 2.5 cm of petroleum) or not receiving/dispensing petroleum for extended periods of time. Facilities should then ensure that the tank is not losing (or gaining) petroleum while out-of-service by sticking the tank at least weekly and noting/responding to any changes in the stick readings.

- **Advance Notification Prior to Mandatory Closure**

  Tank systems that will not be returned to service in 12 months must be closed permanently the day after the 12-month mark, and DEC be notified at least 30 days in advance of the closure. Facilities are thus advised to ascertain if the tank will return to service within 12 months: the 30-day notice may need to be sent on the 11-month mark if it is not clear that the tank will return to service within 12 months.

- **Identifying Closed Tank Systems**

  Inspectors should note any tank systems on the site registration that are no longer at the facility – failing to notify DEC of a permanent tank system closure is a violation. Inspectors should follow up with the records the facility has for the tank removal and ensure that the tank system was properly closed.

  Facilities are strongly advised to notify DEC of the removal of any previously, properly closed (in-place) tanks – even if DEC was promptly notified of its original closure – to formally reflect the removal in the facility registration; however, any spills/releases observed during removal must still be reported to the Spill Hotline within two hours after discovery.

- **Expanding Foam as Inert Material for In-Place Closures**

  Expanding foam may be used as an inert material (in lieu of sand and concrete) to fill tanks during in-place closures, but there are caveats. Foam is seldom used for massive tanks as they may not be able to fill the entire volume of the tank before curing; these unfilled pockets could then become a structural liability as well as a fire safety concern. The density of the cured foam is also an issue: foam may not have a density comparable to those of sand (~101.8 lb/ft^3) and concrete (~150 lb/ft^3), thereby rendering the filled tank susceptible to collapse when a load is placed on it (e.g., traffic or parked cars).

- **Bringing Tank Systems that Underwent a Permanent Closure Back into Service**

  Permanent closure is a one-way street. Permanently closed tank systems may not be brought back into service (like legally out-of-service tank systems), as these are considered to have exited the scope of the PBS regulations. Reusing such tanks – at any location to store petroleum – means re-entering the scope of the PBS regulations as new installations AND meeting all pertinent standards/requirements for the latest Category before use. To this end, facilities can obtain a recertification from either the original tank manufacturer (for shop-fabricated tanks), or from the professional engineer[47] (PE) in charge of rebuilding and/or modifying the tank (for field-fabricated tanks).

[47] This PE must be licensed and registered in New York State (NYS) by the NYS Education Department under Title 8, Article 145 of the Education Law.

- **Storing a Different Type of Petroleum**

  Storing a different type of petroleum (such that the applicable Subpart changes) does not constitute a change-in-service and does not make the tank a newly installed tank; as such, the tank does not need to meet newer Category standards, nor does it require a site assessment before the switch.

- **Compartmented Tanks, Siphoned Tanks, and Tanks with Manifolded Piping**

  Each compartment in a compartmented tank is treated under the PBS regulations as a separate tank because petroleum levels in these compartments do not equilibrate or interact in any way; however, each compartment is part of the same tank system as each compartment fits within the same shell. Compartments that are not in service must be closed in-place, but the requirement for filling with an inert material is waived unless all compartments are to be closed.

  Siphoned tanks (i.e., tanks connected via piping that acts as a siphon) are treated as a single tank as petroleum levels within them equilibrate; while such tanks are considered part of the same tank system, closing one of the siphoned tanks may be done (normally) without closing both tanks, as long as the tank that remains in service can act as a standalone tank.

  Similarly, tanks with manifolded piping (i.e., tanks with piping connected downstream of their respective submersible pumps, supplying a single combined pipe) generally behave like independent tanks: the tank volumes are not combined when in the tanks, and a failure in either tank will not affect the amount of product in the other tank. Such tanks are considered to be part of different tank systems and can be closed independently.

Questions

OC_rc	***What's the tank system's status?***
OC_ri	***Is the registered tank status accurate?*** ***Note: if the tank is actually closed/out of the PBS program, note the closure date in Tank System Information.***
Y	» No issues were found under this question.
IN	» *613-1.9(a)(4):* The registered tank status is inaccurate. » *Note(s):* This Response does not include expired facility registrations, inaccurate facility information, unregistered tanks, or unregistered facilities; such violations should be captured under Question **REG_info**. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must correct the site registration online to reflect the tank's status. » *Additional Action(s):* The inspector should note the specific inaccuracy with the tank status under Question **OC_rc**, to include it in the list of registration discrepancies (in the NOV) that need to be corrected.

OC_oos	*Is the OOS tank following all pertinent requirements?* ***Note: AST systems can be OOS beyond 12 months if at a facility with at least one other in-service tank system.***
Y	» No issues were found under this question.
MT	» *613-2.6(a)(3)(i):* The tank system has been out of service for more than 90 days, but the tank has not been emptied. » *Note(s):* The tank is considered empty when it has no more than 2.5 cm (1 in) of residue. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must empty the tank and submit documentation that the tank has been emptied.
VL	» *613-2.6(a)(3)(ii):* The tank system has been out of service for more than 90 days, but the vent lines have been closed prematurely. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must open the vent lines and submit a photograph showing the open vent lines.
PCS	» *613-2.6(a)(3)(iii):* The tank system has been out of service for more than 90 days, but the piping/ancillary equipment/ports/manways have not yet been capped/secured. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must cap/secure the piping/ancillary equipment/ports/manways and submit a photograph showing the capped/secured equipment.
12M	» *613-2.6(a)(4):* The tank system has been out of service for more than 12 months but has not yet been permanently closed. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to permanently close the tank system (in accordance with an appropriate code of practice) within 60 days after the date of the NOV. In addition, the facility must submit a work plan for a site assessment for the SP2/SP5 UST system within 30 calendar days after the date of the NOV, and submit the resultant report within 90 calendar days after the date of the NOV.

OC_pc	*Did the permanently closed tank undergo proper closure?*
Y	» No issues were found under this question.
PRN	» *613-2.6(b)(1):* A pre-work notification was not submitted to the DEC at least 30 days prior to permanent closure of the tank system. » *Note(s):* Failure to notify the DEC prior to closure is a violation without a (direct) curative measure; however, it should still be treated as a separate/distinct violation from not keeping registration information current and accurate (Question **REG_info**, Response **IN**). » *Curative Measure(s):* If the site registration has yet to be updated, within 7 calendar days after the date of the NOV, the facility must correct the site registration online (to reflect the date of closure) and – if necessary – submit the closure report detailing that the tank system underwent proper closure in accordance with an appropriate code of practice, as well as the site assessment report (for SP2/SP5 UST systems).
IM	» *613-2.6(b)(5)(i) – (iii):* The tank system did not undergo proper permanent closure (in accordance with an appropriate code of practice). » *Note(s):* The closure report is the primary evidence that the tank system underwent proper permanent closure; if the closure was performed properly, but either a copy of the closure report was not submitted to the DEC within 30 days after closure, or the closure report is not being retained for at least three years after tank system closure or until the facility has been permanently closed (whichever is later), Response **NR** or **NSC** under Question **OC_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to permanently close the tank system (in accordance with an appropriate code of practice) or be brought into compliance with all requirements of the PBS regulations, within 60 days after the date of the NOV. » *Additional Action(s):* A tank that was removed improperly may require further action (i.e., perform a site assessment) to ensure that the surrounding environment was not negatively impacted.
SA ***[SP2/SP5]***	» *613-2.6(b)(3):* A site assessment was not performed for the UST system during permanent closure. » *Note(s):* The site assessment report is the primary evidence that the assessment was performed (properly) at the time of permanent closure; if the assessment was performed (properly), but either a copy of the site assessment report was not submitted to the DEC within 90 days after closure, or the site assessment report is not being retained for at least three years after tank system closure or until the facility has been permanently closed (whichever is later), Response **NR** or **NSA** under Question **OC_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a work plan for a site assessment for the tank system, and submit the resultant report within 90 calendar days after the date of the NOV.
XPS ***[SP2/SP5]***	» A site assessment is not required because the tank system had vapor/groundwater monitoring (as a leak detection method), and no releases were detected by said LD method.

OC_rec	***Are the closure records being retained?*** ***Note: records must be retained for 3 years after permanent closure or until the facility has been permanently closed, whichever is later.***
Y	» No issues were found under this question.
NR	» *613-2.6(e):* The closure records (i.e., the closure report and/or the site assessment report) are not being retained for at least three years after tank system closure or until the facility has been permanently closed (whichever is later). » *Note(s):* Closure records are the primary evidence that the tank system underwent proper permanent closure (and/or a site assessment was performed properly for the SP2/SP5 UST at the time of closure); if the records cannot be produced AND copies were not submitted to the DEC in a timely fashion, the tank system likely did not undergo proper closure and/or a site assessment was likely not performed (and Response **IM**/**SA** under Question **OC_pc** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit the missing closure records. » *Additional Action(s):* The inspector may provide a copy of the missing records to the facility if the copies were previously sent to DEC and the facility does not have their own copy.
NSC	» *613-2.6(e)(1):* A copy of the closure report was not submitted to the DEC within 30 days after permanent closure of the tank system. » *Note(s):* The closure report is the primary evidence that the tank underwent proper permanent closure; if the report cannot be produced AND a copy was not submitted to the DEC within 30 days after closure, the tank likely did not undergo proper closure (and Response **IM** under Question **OC_pc** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit documentation proving that the tank system underwent proper closure (in accordance with an appropriate code of practice).
NSA ***[SP2/SP5]***	» *613-2.6(b)(3):* A copy of the site assessment report (for the UST system) was not submitted to the DEC within 90 days after permanent closure of the UST system. » *Note(s):* The site assessment report is the primary evidence that a site assessment was performed (properly) at the time of closure; if the report cannot be produced AND a copy was not submitted to the DEC within 90 days after closure, a site assessment was likely not performed (and Response **SA** under Question **OC_pc** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the site assessment report, or submit a work plan for a site assessment for the tank system and submit the resultant report within 90 calendar days after the date of the NOV.
OC_com	***Was the site assessment complete/adequate?***
Y	» No issues were found under this question.
IN ***[SP2/SP5]***	» *613-2.6(c)(1):* The site assessment performed for the UST system was not adequate (e.g., did not test for all applicable compounds, location/number of samples not satisfactory). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a site assessment that addresses all inadequacies.

Tank System: Design/Construction & Compatibility, Installation, Repair

Purpose

Tank systems must be designed, constructed, and installed to meet certain standards/codes of practice, to ensure that they can safely store petroleum. And when tank system components inevitably fail – despite proper construction/installation and timely upkeep – the equipment must be repaired or replaced accordingly to return it to proper working condition before being brought back into service. These actions help reduce the likelihood of future spills/releases from the tank system.

Requirements

Design, Construction, and Compatibility

Design and construction standards address the technical aspects (e.g., materials used, dimensions, compatibility, etc.) of tank system components that routinely contain petroleum[48]. These standards were created through (ongoing) rigorous testing and empirical data collection by various independent third-party testing laboratories. Newer and better technologies are adopted over time, requiring even more stringent standards for the latest available equipment.

Such requirements in the PBS regulations are either explicitly listed design/performance standards or industry-recognized standards and largely differ based on Category (or installation date). Construction requirements for newly installed tank system components are generally not retroactive (i.e., components for old tank systems may – but are not required to – meet newer standards). (Details on design/construction standards for non-primary containment equipment – secondary containment, cathodic protection, valves, etc. – are found in their respective sections in this document.)

[48] 6 NYCRR subdivision 613-1.3(bd): *Primary containment* means any tank, piping, or ancillary equipment which, under normal operating conditions, routinely contains petroleum. This generally excludes fill pipes and vent pipes, among others.

Underground tanks[49] must meet one of the following design/construction standards[50,51] (as applicable).

Design and Construction: SP2 Tanks	***Cat. 1 Underground Tank***[52]	***Cat. 2 Underground Tank***	***Cat. 3 Underground Tank***

Fiberglass-Reinforced Plastic (FRP) Tanks	Any Cat. 3 standard		• UL 1316 (January 1994)
			• ULC-S615-98 (1998)
			• *(Self-)Structural systems:*
			  ○ UL 1856 (June 2020)
			• *Double-walled (DW) tanks:*
			  ○ UL 1316 (January 1994)
			  ○ UL 1856 (June 2020)

	Any Cat. 2 standard	• UL 1316 (July 1983) • ULC CAN4-S615-M83 (1983)	
	No standard(s) specified		

Cathodically Protected[53,54] ***Steel Tanks***	Any Cat. 3 standard		• UL 58 (December 1996)
			• ULC-S603-00 (2000)
			• *Double-walled (DW) tanks:*
			  ○ STI F841 (January 2006)
			  ○ UL 58 (December 1996)
			  ○ UL 1746 (January 2007)

	Any Cat. 2 standard	• UL 58 (April 1981) • ULC-S603-M1981 (1981)	
	No standard(s) specified		

Clad/ Jacketed[55,56] ***Steel Tanks***	Any Cat. 3 standard		• UL 58 (December 1996)
			• ULC-S603-00 (2000)
			• *Double-walled (DW) tanks:*
			  ○ STI F922 (January 2013)
			  ○ UL 58 (December 1996)
			  ○ UL 1746 (January 2007)

	Any Cat. 2 standard	• UL 58 (April 1981) • ULC-S603-M1981 (1981)	
	No standard(s) specified		
Tanks Constructed of Alternative Materials[57]	No standard(s) specified		

[49] Tanks in inaccessible areas may not feasibly meet the standards for underground tanks and may instead meet standards for aboveground tanks in 6 NYCRR paragraph 613-4.1(b)(1), as appropriate.
[50] Facilities may also comply with a code of practice developed by a nationally recognized association or independent testing laboratory and approved by the DEC.
[51] Conventional design/construction standards/requirements for SP2 tanks are found in 6 NYCRR paragraph 613-2.1(b)(1).
[52] Cat. 1 tanks were not required to follow specific construction standards to avoid retroactive imposition of then-new requirements. Design/construction requirements for Cat. 1 tanks mostly pertain to corrosion protection. See **Corrosion Protection** on p. 156.
[53] Cathodic protection systems for Cat. 2 tanks must be designed, fabricated, and installed in accordance with one of the following: API RP 1632 (January 1983); sti-P_3® (July 1983); ULC-S603.1-M1982 (1982).
[54] Cathodic protection systems for Cat. 3 tanks must be designed, fabricated, and installed in accordance with one of the following: NACE SP0285-2011 (2011); sti-P_3® (September 2013); UL 1746 (January 2007); ULC-S603.1-11 (2011).
[55] The cladding/jacket for Cat. 2 tanks must be designed, fabricated, and installed in accordance with either 6 NYCRR subclause 613-2.1(b)(1)(ii)(*c*)(*2*), or one of the cladding/jacket standards for Cat. 3 tanks.
[56] The cladding/jacket for Cat. 3 tanks must be designed, fabricated, and installed in accordance with one of the following: STI F894 (September 2013); STI F922 (January 2013); STI F961 (September 2013); UL 1746 (January 2007).
[57] Certain Cat. 1 underground tanks had constructions/materials different from the first three mentioned above (i.e., FRP, cathodically protected steel, clad/jacketed steel); these alternative constructions were grandfathered into the PBS regulations to avoid the retroactive imposition of requirements first promulgated on 12/27/86. These, however, are unique to/acceptable for only Cat. 1 tanks.

Piping in contact with the ground must meet the following design/construction requirements[58] (as applicable).

Design and Construction: SP2 Piping	***Cat. 1 Piping***[59]	***Cat. 2 Piping***	***Cat. 3 Piping***

Noncorrodible Piping[60]	No standard(s) specified	Designed and constructed (and installed) with access ports to permit tightness testing without the need for extensive excavation	Designed and constructed:
			• in accordance with one of the following[50]:
			  ○ UL 971 (February 2006); or
			  ○ ULC-S660-08 (2008); and
			• (installed) with access ports to permit tightness testing without the need for extensive excavation

Cathodically Protected[61] ***Metal Piping***	Designed and constructed (and installed) with access ports to permit tightness testing without the need for extensive excavation		Designed and constructed: • in accordance with UL 971A (October 2006)[50]; and • (installed) with access ports to permit tightness testing without the need for extensive excavation
Piping Constructed of Alternative Materials[62]	No standard(s) specified		

[58] Conventional design/construction standards/requirements for SP2 piping (and ancillary equipment) are found in 6 NYCRR paragraph 613-2.1(b)(2).
[59] Cat. 1 piping were not required to follow specific construction standards to avoid retroactive imposition of then-new requirements. Design/construction requirements for Cat. 1 piping mostly pertain to corrosion protection. See **Corrosion Protection** on p. 156.
[60] Noncorrodible piping should not be used as on-ground piping as these could melt and cause spills/releases when exposed to fire.
[61] Cathodic protection systems for Cat. 3 piping must be designed, fabricated, and installed in accordance with one of the following: API RP 1632 (January 2006; revised 2002); NACE SP0169-2013 (2013); NACE SP0285-2011 (2011); STI R892 (January 2006).
[62] Certain Cat. 1 piping had constructions/materials different from the first two mentioned above (i.e., FRP, cathodically protected steel); these alternative constructions were grandfathered into the PBS regulations to avoid the retroactive imposition of then-new requirements. These, however, are unique to/acceptable for only Cat. 1 piping.

Field-constructed tanks (FCTs) with a design capacity greater than 50,000 gallons[63] and any associated piping, may also comply with the following alternative standards[64] (as applicable) in lieu of their equivalent conventional counterparts.

Design and Construction: SP2 FCTs (> 50k gal.) and Associated Piping	***Cat. 1 Tank System Component[65]***	***Cat. 2 Tank System Component[65]***	***Cat. 3 Tank System Component***
Fiberglass-Reinforced Plastic (FRP) FCTs			Designed and constructed in accordance with DoD UFC 3-460-01 (2018)[50]
Cathodically Protected Steel FCTs	No standard(s) specified[66]		
Clad/Jacketed Steel FCTs			
Noncorrodible Piping			
Cathodically Protected Steel Piping	No standard(s) specified[67]		

SP2 tank systems must be proven to meet the required design/construction standards and be compatible[68] with the petroleum type being (or to be) stored in the system. For tank systems storing biofuel blends[69] that are either more than 10% ethanol (>E10), or more than 20% biodiesel (>B20), one of the following compatibility records must be maintained (for each tank system component) until the tank system undergoes permanent closure:

- Certification or listing of the tank system equipment by a nationally recognized, independent testing laboratory for use with the stored biofuel blend
- Equipment manufacturer's approval in writing, indicating an affirmative statement of compatibility and specifying the range of biofuel blends with which the tank system equipment is compatible

Inspectors may request design/construction and/or compatibility documentation from the facility when they have doubts about the construction of a particular tank system equipment; tank systems for which these records cannot be produced or which cannot be proven to meet the required construction/design standards, must either be repaired/retrofitted to meet these requirements, or be closed[70].

[63] These tanks were previously deferred under 40 CFR Part 280.
[64] Alternative design/construction standards/requirements for SP2 FCTs (> 50k gal.) and associated piping are found in 6 NYCRR paragraphs 613-2.1(c)(1), (2), respectively.
[65] The alternative design/construction requirements allowed for Cat. 1/2 FCTs (> 50k gal.) and associated piping mostly pertain to corrosion protection. See **Corrosion Protection** on p. 156.
[66] Cathodic protection systems for Cat. 1/2 FCTs (> 50k gal.) must be designed, fabricated, and installed in accordance with NACE SP0285-2011 (2011).
[67] Cathodic protection systems for Cat. 1/2 piping associated with FCTs (> 50k gal.) must be designed, fabricated, and installed in accordance with NACE SP0169-2013 (2013).
[68] Compatibility requirements for SP2 UST systems are found in 6 NYCRR paragraph 613-2.1(b)(7) and subdivision 2.2(c). Facilities must have these records when the tank system starts storing petroleum blends higher than E10/B20.
[69] Biofuel blends are identified by the blend's ethanol or biodiesel content by volume.
[70] Tank closure must be performed in accordance with 6 NYCRR subdivisions 613-2.6(b & c).

Installation

Tank system equipment must be installed as designed so they work as intended. UST system components must meet the following installation requirements[71] (as applicable).

<table>
<tr><th rowspan="3">SP2 UST Systems:

Installation Requirements</th><th>Cat. 1 Tank System Components</th><th>Cat. 2 Tank System Components</th><th>Cat. 3 Tank System Components</th></tr>
<tr><td rowspan="2">No requirements specified[72].</td><td>Components must be installed in accordance with:
the manufacturer’s instructions; AND
NFPA 30 (1984).
Piping in contact with the ground must have been tightness tested[73] (as installed) before being covered/enclosed/placed in use.
Joints must be liquid-/air-tight.</td><td>Components must be installed in accordance with:
the manufacturer’s instructions; AND
one of the following[50]:
API RP 1615 (April 2011);
NFPA 30 and 30A (2012); or
PEI RP100 (2011).
Installation records must be retained until the tank system is permanently closed.
Copies must also be submitted to DEC.</td></tr>
<tr><td colspan="2">Damage to tank coatings was repaired in accordance with the manufacturer’s instructions BEFORE being backfilled.</td></tr>
</table>

Installation records are required for buried tank system components to help emergency responders (i.e., spill responders, firefighters, etc.) plan their response accordingly. Knowledge of the installation, location, and orientation of these equipment helps prevent (further) disaster in emergency situations; as such, these records should be accessible on site, particularly during an emergency.

Facilities must retain at least two installation documentation for every Cat. 3 tank system components:

- *Installer statement* – a signed statement by the installer certifying that the component was installed in accordance with one of the required codes of practice (listed in the table above); AND
- One of the following:
  - *Installer certification* – document(s) proving that the installer was certified by the equipment manufacturer (as qualified to install the component);
  - *Manufacturer’s installation checklist* – a completed checklist showing that the component was installed in accordance with the manufacturer’s instructions; or
  - *Professional Engineer’s installation inspection and certification* – records that a professional engineer[74] (PE) inspected and certified the component as having undergone proper installation.

Tanks located in an area where the tank may become buoyant due to a rise in the water table, flooding, or accumulation of water (from fire suppression operations), must also have uplift protection. In general:

- Tanks must be located accordingly to take into consideration the local flood stage and anchored properly – or otherwise protected – to prevent movement/flotation and collapse.
- All valves and other openings must either be extended above the maximum flood stage water level or be able to be closed and secured in a locked position in advance of a flood.

For more information on flooding safeguard requirements, see section 2-5.6 of NFPA 30 (1984) (for Cat. 1/2 tanks) and sections 22.14 and 23.14 of NFPA 30 (2012) (for Cat. 3 tanks), as applicable.

[71] Installation requirements for SP2 tank system equipment are found in 6 NYCRR subdivision 613-2.2(a).
[72] Cat. 1 tank system components were not required to meet any installation requirements to avoid retroactive imposition of then-new requirements.
[73] The tightness test must have been performed in accordance with 6 NYCRR paragraph 613-2.3(d)(2).
[74] This PE must be licensed and registered in New York State (NYS) by the NYS Education Department under Title 8, Article 145 of the Education Law. They must also have education and experience in UST system installation.

Repairs

Any issues with the tank system that could lead to a leak or release must be addressed appropriately to prevent them from occurring.

SP2 Repairs and Modifications	***Leak-Imminent Situations***	***Leak-Probable Situations***
Tank System Issue	• Tank system component(s) is not adequate/tight. • Continuation of an operation/practice will result in a leak.	• Tank system component(s) is malfunctioning or in disrepair, and a leak is likely unless action is taken. • Continuation of an operation/practice will likely result in a leak unless action is taken.

Required Course of Action
 	
(One of these must be performed as appropriate/necessary.)
	• Operation/practice must be modified or discontinued immediately.
	• Component(s) must be replaced immediately.
	• Tank system must be either:
	  ○ emptied and taken out of service[75] immediately, and repairs (and subsequent testing) must be performed; or
	  ○ permanently closed[75].
		• Operation/practice must be modified or discontinued immediately.
		• Component(s) must be replaced within 90 days (UNLESS DEC deems a shorter time necessary).
		• Tank system must be either:
		  ○ taken out of service[75] immediately, and repairs (and subsequent testing) must be performed; or
		  ○ permanently closed[75].

[75] Tank systems must be either taken out of service or permanently closed in accordance with 6 NYCRR subdivision 2.6(a) or (b), respectively.

Repairs must be permanent, be at least as protective as either the original construction standard(s) or the manufacturer's specifications and meet the following specific requirements[76] (as applicable).

SP2 Component	***SP2 UST Systems: Specific Repair Requirements***	
	Repair ***(must be conducted in accordance with one of the following[50]…)***	***Post-Repair***
Tanks	*Fiberglass-Reinforced Plastic (FRP) Tanks:* • API RP 1631 (June 2001) • FTPI RP T-95-02 (January 1995) • NFPA 30 (2012) • NFPA 326 (2010) • Manufacturer's repair specifications (if FRP tank is performed by the manufacturer's authorized representative) *Cathodically Protected Steel Tanks:* • API RP 1631 (June 2001) • FTPI RP T-95-02 (January 1995) • NACE SP0285-2011 (2011) • NFPA 30 (2012) • NFPA 326 (2010) • STI R972 (December 2010) *Clad/Jacketed Tanks:* • API RP 1631 (June 2001) • FTPI RP T-95-02 (January 1995) • NFPA 30 (2012) • NFPA 326 (2010)	• *Perform/Pass:* All of the following, as applicable: ○ Tank tightness testing[77] (0.1 gph), within 30 days after repair, UNLESS the tank is: ▪ internally inspected in accordance with API RP 1631 (June 2001); ▪ a Cat. 1/2 FCT with a design capacity > 50k gal. AND undergoes tightness testing (for FCTs)[78] instead; or ▪ monitored for leaks (at least weekly) using one of the following methods[79]: + automatic tank gauging (ATG); + vapor/groundwater monitoring; + interstitial monitoring; or + statistical inventory reconciliation (SIR). ○ CP testing[80] within six months after repair (for cathodically protected steel tanks) ○ IC inspection[80] within 60 days after repair (for cathodically protected steel tanks with impressed current systems) • *Retain (Repair and Post-Repair) Records:* Until the tank system is permanently closed ○ *Send DEC Copies of Tightness Test Results:* Within 30 days after the test is performed
Piping and Fittings	• API RP 2200 (September 2010) • NFPA 30 (2012) *Note(s):* • Metal piping/fittings from which petroleum has leaked cannot be repaired: they must be replaced. • Noncorrodible piping/fittings from which petroleum has leaked may be repaired or replaced. • A new piping run must be installed when 50% (or more) of the piping run (in question) is removed for repair/replacement, UNLESS the piping meets the (conventional) design and construction requirements for Cat. 3 piping.	• *Perform/Pass:* All of the following as applicable: ○ Line tightness testing[81] (0.1 gph, and 1.5 times the normal operating pressure), within 30 days after repair, UNLESS the piping/fitting is: ▪ associated with a FCT with a design capacity > 50k gal. AND undergoes bulk piping tightness testing[82] instead; or ▪ monitored for leaks (at least weekly) using one of the following methods[79]: + vapor/groundwater monitoring; + interstitial monitoring; or + statistical inventory reconciliation (SIR). ○ CP testing[80] within six months after repair (for cathodically protected steel piping and fittings) ○ IC inspection[80] within 60 days after repair (for cathodically protected steel piping and fittings with impressed current systems) • *Retain (Repair and Post-Repair) Records:* Until the tank system is permanently closed ○ *Send DEC Copies of Tightness Test Results:* Within 30 days after the test is performed
Leak Detection Equipment	No standard(s) specified[83] *Note:* repair requirements do not apply to handheld LD equipment.	• *Retain (Repair[84]) Records:* Until three years after repair

[76] Repair requirements for SP2 tank systems are found in 6 NYCRR subdivision 613-2.2(j).
[77] Tank tightness testing must be performed in accordance with 6 NYCRR paragraph 613-2.3(c)(3).
[78] FCT tightness testing must be performed in accordance with 6 NYCRR paragraph 613-2.3(e)(1)
[79] These LD methods must be performed in accordance with 6 NYCRR paragraphs 613-2.3(c)(4 – 8), as applicable.
[80] CP testing and IC inspections must be performed in accordance with 6 NYCRR paragraphs 613-2.2(i)(2), (3), respectively.
[81] Line tightness testing must be performed in accordance with 6 NYCRR paragraph 613-2.3(c)(3).
[82] Bulk piping tightness testing must be performed in accordance with 6 NYCRR paragraph 613-2.3(f)(1).
[83] These repairs are not required to meet any specific standards, but facilities are advised to follow the equipment manufacturer's standards/specifications.
[84] Post-repair testing of LD equipment is not required as long as the equipment is shown to be functional after the repair. Nevertheless, facilities are strongly advised to retain repair records until the tank system is permanently closed.

Secondary Containment	No standard(s) specified[83]	• *Perform/Pass:* One of the following (as applicable) within 30 days after repair:
		  ○ Tank secondary wall:
		  ▪ Interstitial tightness testing[85]
		  ▪ Hydrostatic testing[86]
		  ▪ Vacuum testing[86]
		  ○ Piping secondary wall:
		  ▪ Interstitial tightness testing[87]
		  ▪ Pressure testing[88]
		  ○ Containment sump (when used for piping interstitial monitoring):
		  ▪ Integrity monitoring[89] (for double-walled sumps)
		  ▪ High-level hydrostatic integrity testing[89]
		• *Retain (Repair and Post-Repair) Records:* Until the tank system is permanently closed
		
		Note: failed testing/monitoring results must be reported to the Spill Hotline within two hours after discovery.

Cathodic Protection Systems	NACE SP0285-2011 (2011)	• *Perform/Pass:* All of the following (as applicable):
		  ○ CP testing[80] within six months after repair
		  ○ IC inspection[80] within 60 days after repair (for impressed current systems)
		• *Retain (Repair and Post-Repair) Records:* Until the tank system is permanently closed

Fill Port Catch Basins	No standard(s) specified[83]	• *Perform/Pass:* One of the following (as applicable) within 30 days after repair:
		  ○ Integrity monitoring[89] (for double-walled catch basins)
		  ○ Integrity testing[89]
		• *Retain (Repair and Post-Repair) Records:* Until the tank system is permanently closed
		
		Note: failed testing/monitoring results must be reported to the Spill Hotline within two hours after discovery.

Overfill Prevention Equipment	No standard(s) specified[83]	• *Perform/Pass:* Overfill prevention equipment inspection[90] within 30 days after repair • *Retain (Repair and Post-Repair) Records:* Until the tank system is permanently closed

Repair (and post-repair) records must generally have the following information.

	Repair/Post-Repair Records

SP2 Repair Records:
 	
Required Information
	• Tank ID number
	• Identification of the repaired equipment
	• Date(s) of the repair
	• Notes on any spill/release from the repaired equipment
	• Description of the following:
	  ○ Nature of the repair
	  ○ Standard to which the repair was conducted (if necessary)
	  ○ Details regarding the post-repair inspection/testing/monitoring performed to verify that the repair was effective (depending on the type of equipment repaired), including the results, as necessary
	• A signed statement from the person who performed the repair, that the component underwent a repair that is:
	  ○ permanent; and
	  ○ equal to (or more protective than) the standards of original construction or manufacturer's specifications.

Facilities are also advised to keep records as to what prompted the equipment repair/replacement.

[85] (Tank) Interstitial tightness testing must be performed in accordance with the tank manufacturer's instructions. Alternatively, it may also be performed in accordance with STI RP R012 (April 2007) or FTPI RP 2007-2.
[86] Hydrostatic and vacuum testing of the tank interstice should be performed in accordance PEI RP 1200 (2017).
[87] (Piping) Interstitial tightness testing must be performed in accordance with the piping manufacturer's instructions.
[88] Pressure testing of the piping interstice should be performed in accordance PEI RP 1200 (2017).
[89] Integrity monitoring and (high-level hydrostatic) integrity testing must be performed in accordance with 6 NYCRR subparagraphs 613-2.2(f)(1)(i), (ii), respectively.
[90] OP equipment inspections must be performed in accordance with 6 NYCRR paragraph 613-2.2(e).

Issues

- **Vaulted, Mounded, and Other Visually Accessible Underground Tanks**

  Vaulted, mounded, and other underground tanks that can be visually inspected should be scrutinized for signs of either illegal construction (e.g., riveted steel on Cat. 2/3 tanks) or incompatible construction materials.

- **Piping in Rock Guards**

  Piping in rock guards are considered to be *in contact with the ground*[91], as the rock guard is considered to be a 'material' covering the piping; however, any piping within a rock guard is considered to be noncorrodible piping.

- **Tank System Components Made of Copper or Galvanized Steel (and Other Non-Steel Metals)**

  Modern tank systems rarely have copper or galvanized steel components, but inspectors will run into them occasionally. These components count as metal components that are not inherently corrosion-resistant and thus require cathodic protection (as with cathodically protected steel). The applicable design/construction standards for these components may be fewer than those for steel components, but these non-steel metals are acceptable construction materials (unless there are compatibility issues with the stored petroleum).

- **Bringing Out-of-Service (OOS) SP2 Systems Back into Service**

  An SP2 tank system may be brought back into service after having been legally OOS for 12 months or less.

  An SP2 tank system, however, may not be returned to service if it has been OOS for more than 12 months. These tank systems must be closed and reusing such a tank – at any site – is tantamount to installing a new tank under the PBS regulations. The tank (system) must then meet all standards/requirements for the latest Category (at the time of installation), as certified by the original tank manufacturer as being equivalent to a new tank.

- **Bringing Tank Systems that Underwent a Permanent Closure Back into Service**

  Permanent closure is a one-way street. Permanently closed tank systems may not be brought back into service (like legally out-of-service tank systems), as these are considered to have exited the scope of the PBS regulations. Reusing such tanks – at any location to store petroleum – means re-entering the scope of the PBS regulations as new installations AND meeting all pertinent standards/requirements for the latest Category before use. To this end, facilities can obtain a recertification from either the original tank manufacturer (for shop-fabricated tanks), or from the professional engineer[92] (PE) in charge of rebuilding and/or modifying the tank (for field-fabricated tanks).

- **Using Tank Systems that Previously Stored Non-Petroleum Substances**

  Any tank system – that had never held petroleum – to be used as a PBS tank system, is considered a new installation (i.e., it enters the scope of the PBS regulations). The tank system must then meet – and be proven to meet – all pertinent standards/requirements for the latest Category (as the time it stores petroleum), as certified by the original equipment manufacturer as being equivalent to new components.

[91] Defined in 6 NYCRR subdivision 613-1.3(ak).
[92] This PE must be licensed and registered in New York State (NYS) by the NYS Education Department under Title 8, Article 145 of the Education Law.

- **Changing Subpart Applicability**

  Tank systems may undergo a change (e.g., storing a different type of petroleum, increasing/decreasing the volume of the tank system covered by materials) that results in a change in applicable Subpart. Tank systems in such cases must meet – and be proven to meet – all requirements under the new Subpart prior to (or as part of) the change. (Unless the change involves a physical reinstallation or permanent closure, the tank Category does not change; however, moving the tank may invalidate the design/construction standard listing.)

- **Tank Tilt**

  Tanks were often installed with a tilt prior to use of ethanol-blended gasoline, to funnel water to a specific spot within the tank for easy removal (as gasoline without ethanol extenders were not likely to absorb/interact with water). Installation records – particularly for older tanks – should have this information, as it is often used in the calibration of tank monitoring consoles.

- **Justification for Installation Height of Overfill Prevention Valves**

  Inspectors who encounter tanks with either automatic shutoff valves or ball float valves not set to activate at either 95% or 90% of the design capacity, respectively, should verify that the overfill prevention equipment is installed correctly, by reviewing either the installation records or the delivery records. Installation records should include calculations that justify the alternative actuation height.

- **Check Valve Placement for Suction Piping**

  Facilities are responsible for providing evidence that they have safe suction piping (based on the placement of their check valves) and are therefore exempt from piping leak monitoring. Installation records should have this information and be available at the time of inspection.

Questions

TS_cs	*Does the tank system meet pertinent construction standards?*
Y	» No issues were found under this question.
TC	» *613-2.1(b)(1)(i) / 2.1(b)(1)(ii) / 2.1(b)(1)(iii):* The tank does not meet applicable design/construction requirements. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to permanently close the tank system within 60 days after the date of the NOV.
PC	» *613-2.1(b)(2)(i) / 2.1(b)(2)(ii) / 2.1(b)(2)(iii):* The piping does not meet applicable design/construction requirements. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to either replace the piping or permanently close the tank system, within 60 days after the date of the NOV.

TS_bf	Is the entire tank system compatible with the stored petroleum?
Y	» No issues were found under this question.
CI	» *613-2.1(b)(7):* The tank system is not compatible with the stored petroleum. » *Note(s):* Compatibility documentation is the primary evidence that the tank system is compatible with biofuel blends greater than E10/B20; if a tank system component is compatible, but documentation is not being retained at least until tank system closure, Response **NR** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to permanently close the tank system within 60 days after the date of the NOV.
NR	» *613-2.2(c)(2):* Compatibility documentation is not being retained for one or more tank system components, at least until the tank system (storing biofuel blends greater than E10/B20) is permanently closed. » *Note(s):* Compatibility documentation is the primary evidence that the tank system is compatible with biofuel blends greater than E10/B20; if the documentation is missing, the tank system component is likely not compatible (and Response **CI** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either: obtain (and submit) the compatibility documentation; submit a plan to replace the incompatible component(s) with compatible equipment within 90 calendar days after the date of the NOV; or submit a plan to permanently close the tank system within 60 days after the date of the NOV.
XP	» Compatibility documentation is not required because the tank system is not storing a biofuel blend greater than E10/B20.
TS_ir	**Are there installation records for the UST system?**
Y	» No issues were found under this question.
NSS [SP2/SP5]	» *613-2.2(a)(3)(iii):* The signed statement from the installer is not being kept, or the statement is not being retained (for all Cat. 3 UST system components) until the tank system is permanently closed. » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must obtain (and submit) a copy of the installer-signed statement.
NAD [SP2/SP5]	» *613-2.2(a)(3)(iii):* The document accompanying the signed statement from the installer is not being kept, or the document is not being retained until the tank system is permanently closed. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either obtain (and submit) a copy of the installer's certification from the component manufacturer or the (completed) manufacturer's installation checklist, or have a PE perform (and submit a copy of) an installation inspection.
XT [SP2/SP5]	» Installation records not required because the UST system does not have any Cat. 3 components.
TS_rat	**If repairs were made, are the repairs appropriate/adequate, and was the equipment tested after the repair?**
Y	» No issues were found under this question.
IN	» *613-2.2(j)(3) – (8):* The repairs made to a tank system component were inappropriate/inadequate. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either: take the tank system out of service and submit a plan to properly repair the tank system component within 90 calendar days after the date of the NOV; or submit a plan to permanently close the tank system within 60 days after the date of the NOV.
NIT	» *613-2.2(j)(9) – (12):* An appropriate inspection/test was not performed for the tank system component after the repair. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a tightness test.
XP	» A tightness test is not required because either the tank system component is being monitored for leaks at least weekly, or the repaired tank was internally inspected following the repair.

Operator Training

Purpose

Operator Training is a program designed to prevent spills and releases by requiring facilities with SP2 UST systems to properly educate their staff on regulatory compliance, correct operation/maintenance of tank system equipment, and protocols to follow when components fail, and spills occur.

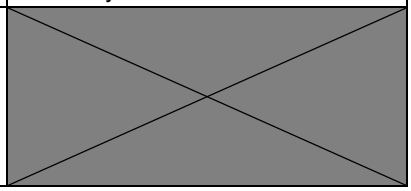
Requirements

Facilities must have[93] three types of Operators for every SP2 UST system on site: Class A, B, and C Operators.

- *Class A Operator* – An administrative staff person, mainly in charge of registration and other paperwork.
- *Class B Operator* – A hands-on staff person, primarily concerned with day-to-day operation of the tank system itself.
- *Class C Operator(s)* – Every staff person (at the facility) who can immediately respond to emergency situations concerning the tank system.

There are no limitations on who can be a Class A/B/C Operator, or how many Classes or tank systems/facilities for which the Operator can be designated, but they must be an individual capable of fulfilling the responsibilities associated with the Operator Class(es).

Class A, B, and C Operators must meet the following specific requirements (as applicable).

SP2 Operator Training	***Class A Operator***	***Class B Operator***	***Class C Operator(s)***
General Requirements	Operator must be authorized[94] (before being designated on the facility registration), by doing one of the following: • passing the Operator Exam; or • requesting reciprocity (before October 17, 2023) for an out-of-state Operator authorization.		Operator must be trained – by an authorized Class A or B Operator – on their site-specific responsibilities (i.e., basic overview of tank system components, emergency contact information, how to respond to spills/emergencies, etc.).
Required Designation *(per applicable UST system at the facility)*	One Class A Operator must be designated on the facility registration[95].	One Class B Operator must be designated on the facility registration[95].	Every individual (at the facility) who meets the definition of Class C Operator must be designated on their respective Class C Operator Training Log.
Recordkeeping	• *Required Document:* Class A/B Operator authorization certificate • *Retain (Operator) Records:* for the entire duration of the Operator's designation PLUS three years		• *Required Document:* Class C Operator Training Log • *Retain (Operator) Records:* For the entire duration of the Operator's designation PLUS three years
Retesting	Operator must be retested: • within five years after the date of the last valid Operator authorization certificate; and • when the UST system(s) – for which the Operator is designated – is determined to be in significant non-compliance (SNC)[96] as defined in DER-40.		

[93] Operator Training requirements for SP2 tank systems are found in 6 NYCRR section 613-2.5.
[94] This must be done through the UST Operator Exam Website (www.dec.ny.gov/about/101500.html).
[95] Authorized Class A/B Operators must be designated on the facility registration; if a Class A or B Operator is no longer the designated Operator (i.e., separation from employment, death, etc.), a replacement must be designated within 30 days after the change as part of an information correction. (Inspectors should use their discretion in citing the facility for inaccurate registration during this 30-day period.)
[96] Class A/B Operators deauthorized as a result of SNC have 30 days to become reauthorized by passing the appropriate Operator Exam; if they fail to do that, the facility must then designate a different person.

Class C Operator Training logs must have the following information.

	Class C Operator Training Log

SP2 Operator Training Records:
 	
Required Information
	• Class C Operator:
	  ○ Name
	  ○ Initial testing/training completion date
	  ○ Designation date
	  ○ Tank ID(s) and site address/PBS number for which they are responsible
	  ○ Retraining date(s)
	• Class A/B Operator who trained the Class C Operator:
	  ○ Name
	  ○ Operator Class
	  ○ Operator Authorization Number (OAN)
	  ○ Signed statement that the Class C Operator was trained to take appropriate actions at the facility in response to emergencies and alarms indicating spills or releases

Issues

- **Designating Multiple Operators**

  Facilities may designate as many Operators as they need but may only designate one for each Class per tank system to the DEC (due to technical limitations of the registration database). Facilities with multiple Operators are advised to keep their own list of designated Operators separate from the required Operator records.

- **Companies/Entities or Titles Listed as the Class A/B/C Operator**

  Listing companies or titles (e.g., “site manager” or “foreman”) as Class A/B/C Operators is not allowed. These Operators must be real people as they have actual responsibilities to fulfill towards tank systems; ignoring these responsibilities (or assigning them to faceless entities or titles) can lead to – or even exacerbate – real spills and releases.

- **Deauthorized Operators and Retraining**

  Class A/B Operators may become deauthorized for one of two reasons: the Operator created multiple exam accounts to circumvent the exam frequency limitations[97] set in DER-40; or the Operator was responsible for a facility found to be in significant non-compliance (SNC). Deauthorized Operators’ OANs are deemed invalid until such time that they can pass the Operator Exam again. Inspectors should check the validity of the designated Operators’ OANs through Exam Website prior to the inspection.

- **Professional Engineer’s (PE) Licenses, FDNY Certificates of Fitness (COF) and Other Accreditations**

  The Operator Exam is strictly centered on compliance with the PBS regulations. No alternative accreditations will be accepted in lieu of NYS Operator authorization, as these focus on information that, at best, is only tangentially related to 6 NYCRR Part 613.

- **Class A vs. Class B Authorizations**

  Class A and Class B Operators have overlapping but ultimately different responsibilities and being authorized in one Operator Class does not grant a person authorization in the other Class. Individuals can be authorized for both Classes by passing both the Class A and B Operator Exams, passing the combined Class A/B Operator Exam, or being granted reciprocity for both Classes for out-of-state authorizations.

[97] Class A/B Operators may only take 3 exams in any six-month period to prevent them from seeing the same questions repeatedly. Operators deauthorized because of multiple accounts in the Operator Exam Website are allowed to retake the Exam six months from the date of the first of their last three exams.

- **Operators Being on Site**

  Operators are not strictly required to be on site to fulfill their responsibilities, as long as they can attend to these responsibilities appropriately. (*Note:* the Fire Code has specific requirements – under 2304.3 – pertaining to unattended motor-fuel dispensing facilities, which includes obtaining prior approval for the facility, and daily site visits, among others.)

- **Class C Operator Training**

  Class C Operator training may differ from site to site and employ either paper/in-person or digital/online methods (or both) but will always be accepted as long as the Operator comes away with the site-specific knowledge and capability required to fulfill the responsibilities of a Class C Operator at that site. Inspectors may quiz/test the Class C Operator during the inspection, but DEC will not certify trainers nor review training programs for these Operators.

- **Class C Operators for Facilities that Operate Beyond Normal Business Hours**

  Class C Operators are not required to be on site, especially beyond a facility's normal business hours. Facilities that have dispensers being used after hours (e.g., military bases, municipal garages) are advised to post signage near the dispenser that has the information required of a Class C Operator; doing so allows the person using the dispenser to respond to the spill like a Class C Operator would.

Questions

OT_d	*Are there authorized Class A/B Operator(s) and trained Class C Operator(s) designated for this tank?*
Y	» No issues were found under this question.
NDA ***[SP2/SP5]***	» *613-2.5(a)(1):* The Class A Operator is authorized but has not been designated for the tank system. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must designate the Class A Operator by updating the site registration online.
NOA ***[SP2/SP5]***	» *613-2.5(b)(1):* There is no authorized Class A Operator designated for the tank system, or the previously designated Class A Operator either no longer works for the facility or was deauthorized (and has not yet been reauthorized). » *Note(s):* Authorization certificates are the primary evidence that the Operator is authorized; if the Operator is authorized but their certificate is not being kept, Response **NDA** should be selected instead, along with Response **NRA** (under Question **OT_rec**). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must designate an authorized Class A Operator by updating the site registration online.
NDB ***[SP2/SP5]***	» *613-2.5(a)(1):* The Class B Operator is authorized but has not been designated for the tank system. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must designate the Class B Operator by updating the site registration online.
NOB ***[SP2/SP5]***	» *613-2.5(b)(2):* There is no authorized Class B Operator designated for the tank system, or the previously designated Class B Operator either no longer works for the facility or was deauthorized (and has not yet been reauthorized). » *Note(s):* Authorization certificates are the primary evidence that the Operator is authorized; if the Operator is authorized but their certificate is not being kept, Response **NDB** should be selected instead, along with Response **NRB** (under Question **OT_rec**). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must designate an authorized Class B Operator by updating the site registration online.
NOC ***[SP2/SP5]***	» *613-2.5(a)(2) / 2.5(b)(3):* There is no trained Class C Operator designated for the tank system, or the previously designated Class C Operator no longer works for the facility. » *Note(s):* Training logs are the primary evidence that the Operator is trained; if the Operator is trained but their training log is not being kept, Response **NRC** (under Question **OT_rec**) should be selected instead. » *Curative Measure(s):* Within 10 calendar days after the date of the NOV, the facility must have a Class A or B Operator (familiar with the Class C Operator's site-specific responsibilities) train/designate a Class C Operator, and submit a copy of the training log.

OT_rec	***Are Operator Training records being retained?*** ***Note: records must be retained as long as the Operator is designated, PLUS 3 years after designation.***
Y	» No issues were found under this question.
NRA ***[SP2/SP5]***	» *613-2.5(e)(1):* The (current) Class A Operator's authorization certificate is not being kept, or the certificate is not being retained until three years after their designation (for any of the previous Class A Operators). » *Note(s):* Authorization certificates are the primary evidence that the Operator is authorized; if the certificate cannot be produced AND the Operator is not on DEC's Operator Training Database, the Operator is likely not authorized (and Response **NOA** under Question **OT_d** should be selected instead). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must submit the authorization certificates for all Class A Operators designated (for the tank system) in the last three years.
NRB ***[SP2/SP5]***	» *613-2.5(e)(1):* The (current) Class B Operator's authorization certificate is not being kept, or the certificate is not being retained until three years after their designation (for any of the previous Class B Operators). » *Note(s):* Authorization certificates are the primary evidence that the Operator is authorized; if the certificate cannot be produced AND the Operator is not on DEC's Operator Training Database, the Operator is likely not authorized (and Response **NOB** under Question **OT_d** should be selected instead). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must submit the authorization certificates for all Class B Operators designated (for the tank system) in the last three years.
NRC ***[SP2/SP5]***	» *613-2.5(e)(2):* The (current) Class C Operator's training log is not being kept, or the training log is not being retained until three years after their designation (for any of the previous Class C Operators). » *Note(s):* Training logs are the primary evidence that the Operator is trained; if the training log is missing, the Operator is likely not trained (and Response **NOC** under Question **OT_d** should be selected instead). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must submit the training logs for all Class C Operators designated (for the tank system) in the last three years.
OT_rt	***Are the Class A/B Operators being retested periodically?***
Y	» No issues were found under this question.
RTA ***[SP2/SP5]***	» *613-2.5(c)(4):* The Class A Operator has not been retested or is not being retested at least every five years. » *Note(s):* Class A Operators must be initially retested within the later of the following: two years after the effective date of the new PBS regulations, or five years after the date of the last valid Operator authorization certificate. Periodic retesting must occur every five years afterwards. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either have the Class A Operator undergo retesting or designate an authorized Class A Operator by updating the site registration online.
RTB ***[SP2/SP5]***	» *613-2.5(c)(4):* The Class B Operator has not been retested or is not being retested at least every five years. » *Note(s):* Class B Operators must be initially retested within the later of the following: two years after the effective date of the new PBS regulations, or five years after the date of the last valid Operator authorization certificate. Periodic retesting must occur every five years afterwards. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either have the Class B Operator undergo retesting or designate an authorized Class B Operator by updating the site registration online.

Walkthrough Inspections

Purpose

Walkthrough inspections are periodic rounds of the facility, designed to familiarize operators with their facility/equipment and make them aware of any issues that have occurred (or have yet to occur) with the tank system – this reduces the risk of equipment failure and spills/releases that follow. Operators performing site inspections are more likely to catch and address such issues (sooner) than those relying solely on alarms.

Requirements

Walkthrough inspections for (in-service, non-empty) SP2 tank systems[98] comprise of 30-day and annual inspections and must consist of the following actions (as applicable).

SP2 Component	*Specific Requirements*
30-Day Walkthrough Inspections	

Fill Port Catch Basins[99]	• Catch basin must be visually checked for damage.
	  ○ Any liquid[100] or debris within must be removed.
	• Fill pipe must be checked for obstructions.
	  ○ Any found must be removed.
	• Fill cap must be verified to have a secure fit/seal around the fill pipe.
	• Interstice of a double-walled catch basin (monitored for integrity) must be checked for leaks.

Leak Detection Equipment and Methods	• LD equipment (required under 6 NYCRR subdivision 613-2.3(b)) must be checked for proper operation, with no alarms or other unusual operating conditions present. • LD records must be verified to be current and have been reviewed by the facility.
Annual Walkthrough Inspections	
Containment Sumps[101]	• Sump must be visually checked for damage, leaks/releases, and debris. ○ Any liquid[100] or debris within must be removed. • Interstice of a double-walled sump (monitored for integrity) must be checked for leaks.
Handheld (Non-Electronic) Leak Detection Equipment	Tank gauging sticks and groundwater bailers must be checked for operability and serviceability (if used for a leak detection method listed under 6 NYCRR subdivision 613-2.3(c)).

Alternatively, walkthrough inspections may be performed in accordance with PEI RP900 (2021)[102], at frequencies specified within the code of practice.

A leak is suspected (during the walkthrough inspection) when:

- petroleum is found in the interstice of a double-walled fill port catch basin/containment sump; or
- the leak detection equipment indicates that a spill/release may have occurred.

Either scenario must be reported to the Spill Hotline within two hours after discovery; the second scenario may not be considered a suspected spill if the leak detection equipment is found to be defective and is immediately repaired/replaced/recalibrated, AND additional monitoring does not confirm the initial results indicating a spill/release occurred.

[98] Walkthrough inspection requirements for SP2 tank systems are found in 6 NYCRR subdivision 613-2.2(h).
[99] Inspections for fill port catch basins may be performed prior to every delivery if deliveries are less frequent than every 30 days.
[100] Petroleum in the fill port catch basin or containment sump may still need to be reported to the Spill Hotline within two hours after discovery. See **Spills** on p. 460.
[101] All sumps are subject to annual walkthrough inspections regardless of whether it is used for piping interstitial monitoring.
[102] Facilities may also comply with a code of practice developed by a nationally recognized association or independent testing laboratory and approved by the DEC.

Walkthrough inspection records must be retained for (at least) three years and have the following information.

SP2 Walkthrough Inspection Records: ***Required Information***	***30-Day and Annual Walkthrough Inspections***

	• PBS number and site address
	• Tank ID number
	• Date/time of inspection
	• Delivery records (for 30-Day Inspections, if the spill bucket is inspected less frequently than every 30 days)
	• Component(s) inspected
	  ○ Aspects verified
	  ○ Any issues identified
	  ○ Description of actions taken to rectify any issues identified

Issues

- **Extent of Monthly Walkthrough Inspection Records to be Reviewed**

  Facilities must keep the last year of monthly walkthrough inspection records at any given time (unless the tank has been in service for less than one year), but inspectors are advised to review at least ten of the last 12 months' worth of records. Inspectors have the discretion to review more or less records as necessary depending on the facility's compliance history and whether spills are suspected.

Questions

WT_itm	***Are the inspections being performed periodically?*** ***Note: 30-day (UST system) inspections may be performed less frequently (i.e., prior to every delivery) if deliveries are less frequent than every 30 days.***
Y	» No issues were found under this question.
N30U ***[SP2/SP5]***	» *613-2.2(h)(1)(i)(a):* 30-day inspections are not being performed for the UST system. » *Note(s):* Inspection records are the primary evidence that 30-day inspections are being performed; if inspections are being performed, but records are not being retained for at least three years, Response **NR30U** under Question **WT_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) a 30-day inspection.
P30U ***[SP2/SP5]***	» *613-2.2(h)(1)(i)(a):* 30-day inspections are not being performed for the UST system at least every 30 days. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) a 30-day inspection.
NA ***[SP2/SP5]***	» *613-2.2(h)(1)(i)(b):* Annual inspections are not being performed for the UST system. » *Note(s):* Inspection records are the primary evidence that annual inspections are being performed; if inspections are being performed, but records are not being retained for at least three years, Response **NRA** under Question **WT_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an annual inspection.
PA ***[SP2/SP5]***	» *613-2.2(h)(1)(i)(b):* Annual inspections are not being performed for the UST system at least annually. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an annual inspection.

WT_rec	***Are the inspection records being retained?*** ***Note: records must be retained for 3 years. 30-day (UST system) inspection records must include delivery records if inspections are performed less frequently than every 30 days.***
Y	» No issues were found under this question.
NR30U ***[SP2/SP5]***	» *613-2.2(h)(2):* 30-day inspections are not being recorded, or records are not being retained (for the UST system) for at least three years. » *Note(s):* A facility is considered in compliance if they have records for at least ten of the last 12 inspections. Inspection records are the primary evidence that 30-day inspections are being performed; if the records are missing, inspections are likely not being performed (and Response **N30U** under Question **WT_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records of the last 30-day inspection, or perform (and submit the records of) a 30-day inspection.
NRA ***[SP2/SP5]***	» *613-2.2(h)(2):* Annual inspections are not being recorded, or records are not being retained (for the UST system) for at least three years. » *Note(s):* Inspection records are the primary evidence that annual inspections are being performed; if the records are missing, inspections are likely not being performed (and Response **NA** under Question **WT_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records of the last annual inspection, or perform (and submit the records of) an annual inspection.

WT_com	***Was the inspection complete/adequate?*** ***Note: while containment sumps and handheld LD equipment are to be covered under the annual inspections, certain facilities include them in the 30-day inspection to avoid having to create/use a separate form for the annual walkthrough inspection. In those cases, the annual walkthrough inspection requirement is satisfied, and ACS and AHH do not apply.***
Y	» No issues were found under this question.
30CB ***[SP2/SP5]***	» *613-2.2(h)(1)(i)(a)(1):* 30-day inspections do not include the fill port catch basin(s). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) a 30-day inspection and include the catch basin(s) in the inspection.
30LD ***[SP2/SP5]***	» *613-2.2(h)(1)(i)(a)(2):* 30-day inspections do not include the leak detection equipment. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) a 30-day inspection and include the leak detection equipment in the inspection.
30D ***[SP2/SP5]***	» *613-2.2(h)(2):* 30-day inspection records do not include the delivery records. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit the delivery records for the last 30 days.
COP ***[SP2/SP5]***	» *613-2.2(h)(1)(ii):* Walkthrough inspections were not performed to a code of practice (e.g., PEI RP900) in lieu of specified standards for 30-day/annual inspections. » *Note(s):* If a facility chooses to follow a code of practice, they must follow all specified requirements/recommendations even if they go above and beyond what is minimally required in the regulations. However, the facility may use a code of practice as a guide on how to conduct the minimum requirements of the monthly and annual walkthrough inspections set in the regulations (e.g., follow PEI RP900's instructions on how to check sumps for damage) without having to perform the more stringent procedure in the code of practice. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) either a code-of-practice inspection or both a 30-day and annual inspection.
ACS ***[SP2/SP5]***	» *613-2.2(h)(1)(i)(b)(1):* Annual inspections do not include the containment sump(s). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an annual inspection and include the containment sump(s) in the inspection.
AHH ***[SP2/SP5]***	» *613-2.2(h)(1)(i)(b)(2):* Annual inspections do not include the handheld leak detection equipment. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an annual inspection and include the (handheld) leak detection equipment in the inspection.

Leak Detection

Purpose

Leak detection allows facility staff to monitor tank system equipment for spills and any integrity issues and respond to them immediately to keep spills from growing. This in turn helps decrease the chances of those spills reaching the lands and/or waters of the State (and becoming releases).

Requirements

Leak detection refers to assessment methods/equipment that alert the operator to leaks from – and/or integrity issues with – the tank system, specifically the primary containment[103] (that is in contact with the ground). Facilities must meet the following overall leak detection requirements[104] (as applicable).

SP2 Leak Detection	***Requirements***
General[105]	LD equipment must be: • installed/calibrated in accordance with the manufacturer's instructions (and an acceptable code of practice[106]); • able to detect leaks (with a probability of at least 95% and no more than 5% probability of false alarm) from any portion of both the tank and piping that are in contact with the ground and routinely contain petroleum; and • meets specific requirements. *Note:* LD requirements are suspended for tank systems that are out of service and empty.
Periodic Equipment Inspections	• Electronic LD equipment must be inspected for connectivity[107] at least every 30 days. • Specific LD equipment must be inspected for operability[107] at least annually. ○ Inspections must be performed in accordance with[108]: ▪ the manufacturer's instructions; or ▪ PEI RP1200 (2019). ○ Inspections must verify the following: ▪ Automatic tank gauge/monitoring console (and other controllers) has a functional alarm and battery backup and is configured appropriately. ▪ Probes and sensors are inspected for residual buildup; floats move freely; the shaft is not damaged; cables are free of kinks/breaks; and alarms are functional (and communicate with the console). ▪ Automatic line leak detectors are tested for operability by simulating a leak. ▪ Vacuum pumps and pressure gauges have proper communication with sensors and the console. ▪ Handheld electronic sampling equipment for vapor/groundwater monitoring are in good working order. • LD equipment are also subject to walkthrough inspections[109] performed every 30 days and/or annually.
(Suspected) Spill Reporting	Any monitoring results or alarms indicating that a leak may have occurred is considered a suspected leak that must be reported to the DEC Spill Hotline within a specific timeframe; however, this reporting requirement is waived if certain applicable conditions are met[110].

[103] 6 NYCRR subdivision 613-1.3(bd): *Primary containment* means any tank, piping, or ancillary equipment which, under normal operating conditions, routinely contains petroleum. This generally excludes fill pipes and vent pipes, among others. Leak detection requirements also exclude any aboveground piping (not in contact with the ground) from which a leak is readily visible.
[104] Leak detection requirements for SP2 tank systems are found in 6 NYCRR section 613-2.3.
[105] General LD requirements for SP2 tank systems are found in 6 NYCRR subdivision 613-2.3(a).
[106] See **Installation** on p. 52.
[107] Connectivity & operability inspection requirements for SP2 LD equipment are found in 6 NYCRR subdivision 613-2.2(g).
[108] Facilities may also comply with a code of practice developed by a nationally recognized association or independent testing laboratory and approved by the DEC.
[109] See **Walkthrough Inspections** on p. 64.
[110] See **Spills** on p. 460.

Recordkeeping	*Retain:*
	• *LD and Equipment Inspection Records:* For three years
	  ○ *Note:* LD records for the last 30 calendar days – either digital or hard copies – must always be accessible at the facility to help inform any DEC/facility staff responding to spills.
	• *Tightness Test Results:* For three years or until the next test, whichever is later
	  ○ *Send DEC copies:* Within 30 days after the test is performed
	• *Site Assessment Reports[111] (for Vapor/Groundwater Monitoring):* Until five years after the LD equipment installation OR while LD method is in use, whichever duration is longer[112]
	• *Written Performance Claims[112] for LD Equipment:* Until five years after LD equipment installation
	• *Schedules of Required Calibration and Maintenance (from the LD equipment manufacturer):* Until five years after the LD equipment installation
	• *Calibration, Maintenance, and Repair[113] Records (for LD equipment permanently located at the facility):* Until three years after completion of servicing work

DEC may require facilities to conduct additional inspections/testing/monitoring if the facility has suspected leaks, inspections/monitoring/tests that have not been performed, or inaccurate/inadequate inventory monitoring records. Facilities must complete this additional inspection/testing/monitoring within ten days after receipt of the request, or DEC will conduct inspections/testing/monitoring at the facility's expense.

Facilities with inoperative leak detection equipment – especially those that fail the connectivity and/or operability inspections – must immediately repair/replace/recalibrate the equipment, perform a different type of leak detection valid for their tank/piping, or permanently close the tank system[114] (and update the registration accordingly).

Conventional Tank and Piping Leak Detection

SP2 tanks are required[115] to have two forms of leak detection, as applicable:

- inventory monitoring (also known as ten-day inventory reconciliation), as required for tank systems storing motor fuel/kerosene for resale in a commercial transaction[116]; and
- a periodic leak detection method[117] able to detect a leak of 0.2 gph (and that meets specific requirements).

[111] 6 NYCRR paragraph 613-2.3(g)(4): Site assessment reports must be retained for as long as vapor/groundwater monitoring is being used as an LD method, beginning on 10/13/18. (Any site assessment performed after October 13, 2015, must also be signed by either a NYS professional engineer (PE), a professional geologist, or an equivalent licensed professional with experience in environmental engineering, hydrogeology, or other relevant technical discipline.)

[112] These performance claims would document the LD equipment's ability to detect leaks with a probability of at least 95% and no more than 5% probability of false alarm. This recordkeeping requirement applies to the following LD methods/equipment: tightness testing (i.e., line, field-constructed tank, bulk piping); automatic tank gauging (for tanks and field-constructed tanks); vapor/groundwater monitoring; electronic interstitial monitoring; statistical inventory reconciliation; and automatic line leak detectors. *Note:* For vapor/groundwater monitoring equipment, site assessment reports also function as written performance claims; as such, the site assessment report must be retained for five years after the vapor/groundwater monitoring equipment is installed (or first used), or for as long as vapor/groundwater monitoring is used as an LD method, whichever duration is longer.

[113] See **Repairs** on p. 53.

[114] Tank systems must be permanently closed in accordance with 6 NYCRR subdivision 2.6(b).

[115] Specific LD requirements for SP2 tanks are found in 6 NYCRR paragraph 613-2.3(b)(1).

[116] "Commercial transaction" means receipted sales (through metered dispensers) that involve the end-user; by contrast, contractual transactions are arrangements between two parties (e.g., car rental companies and clients, municipal facilities allowing fleet vehicles from a different municipal agency to use their dispensers).

[117] For Cat. 1 tanks and Cat. 1/2 piping, facilities may use another LD method not explicitly mentioned in 6 NYCRR subdivision 613-2.3(c)/(d) if: the method is demonstrated to be as effective as those listed/required in the regulations; and DEC approves its use. (DEC is not aware of any other LD methods that meet these criteria at the time of this writing). Inspectors should investigate the registered LD method if listed as "99 – Other".

Facilities must meet the following requirements for specific tank LD methods.

SP2 Tank LD Method	Cat. 1 Tank	Cat. 2 Tank	Cat. 3 Tank
Inventory Monitoring [INV]	• *Required for:* Tanks storing motor fuel/kerosene for resale (with metered dispensers) in a commercial transaction[116] • *Take Measurements:* Daily (for ten calendar days) • *Perform and Record Results:* Every ten days ○ *Allowable Variance (%):* 0.75% • *Retain Records:* For three years		
Manual Tank Gauging [MTG]	• *Acceptable for:* Tanks with specific diameters/capacities • *Perform and Record Results:* Weekly • *Retain Records:* For three years		

Automatic Tank Gauging [ATG]	• *Perform and Record Results:* Weekly / Continuously
	  ○ *Leak Rate:* 0.2 gph
	• *Inspect for Connectivity:* Every 30 days
	  ○ Tank Monitoring Console
	  ○ Probes
	• *Inspect for Operability:* Annually
	  ○ Tank Monitoring Console
	  ○ Probes
	• *Retain Records:* For three years		

Vapor/ Groundwater Monitoring [VGM]	• *Perform and Record Results:* Weekly / Continuously
	• *Inspect for Connectivity:* Every 30 days
	  ○ Tank Monitoring Console
	  ○ (Well) Sensors
	• *Inspect for Operability (as applicable):* Annually
	  ○ Tank Monitoring Console
	  ○ (Well) Sensors
	  ○ Handheld Electronic Sampling Equipment
	• *Retain Records:* For three years
	  ○ *Retain Site Assessment Report:* While LD method is in use		

Interstitial Monitoring [INS]	• *Required for:* Double-walled tanks
	• *Perform and Record Results:* Weekly / Continuously
	• *Inspect for Connectivity (as applicable):* Every 30 days
	  ○ Tank Monitoring Console
	  ○ Probes/Sensors
	• *Inspect for Operability (as applicable):* Annually
	  ○ Tank Monitoring Console
	  ○ Interstitial/Sump Sensors
	  ○ Vacuum Pumps/Pressure Gauges
	• *Retain Records:* For three years		

Statistical Inventory Reconciliation [SIR]	• *Acceptable for:* Tanks associated with metered dispensers • *Take Measurements:* Daily (for ~30 calendar days) • *Perform and Record Results:* Weekly ○ *Leak Rate:* 0.2 gph • *Retain Records:* For three years		

Leak detection requirements for SP2 piping[118] (in contact with the ground) are generally split between two very different piping types:

- *Pressurized piping* conveys petroleum under pressure produced by a submersible turbine pump (STP) located at the tank.
    - One submersible turbine pump (STP) can transmit petroleum to multiple dispensers/equipment.
    - Pressurized piping is preferred – and historically more common/cheaper than suction piping – at facilities in the US that have high throughput, due to the STP's ability to provide higher flowrates to more dispensers/equipment.
    - This higher flowrate often magnifies the volume of piping leaks, potentially leading to greater environmental contamination and higher cleanup costs.
- *Suction piping* conveys petroleum under vacuum produced by a suction pump located away from the tank.
    - Each suction line requires a suction pump.
    - Suction piping is commonly limited to facilities with low throughput because suction pumps are not as robust as STPs and can only provide lower flowrates through the dispenser/equipment.
    - Leaks from suction piping are generally smaller in volume compared to those from pressurized piping, leading to less serious environmental contamination (and relatively lower cleanup costs).

Check valves are fitted to suction piping to help the pump hold prime, but the valve placement can minimize the volume of the petroleum released if the piping fails. Safe suction (also known as exempt or European suction) piping has the following attributes:

- Each suction line only has one check valve.
- The check valve is located directly below and as close as practicable to the suction pump.
- The piping is sloped such that its contents will drain back into the (underground) tank if suction is released (i.e., piping fails).
- The piping operates at less than atmospheric pressure.

Suction piping that does not have the above characteristics is non-exempt/American suction piping, which is more prone to larger and more serious environmental contamination than safe suction piping.

SP2 pressurized and non-exempt/American suction piping must have at least one periodic leak detection method[117] (that meets specific requirements); however, all pressurized piping must additionally be equipped with an automatic line leak detector (ALLD).

[118] Specific LD requirements for SP2 piping are found in 6 NYCRR paragraph 613-2.3(b)(2).

Facilities must meet the following requirements for specific piping LD methods.

SP2 Piping LD Method	***Cat. 1 Piping***	***Cat. 2 Piping***	***Cat. 3 Piping***

Automatic Line Leak Detector [ALLD]	• *Required for:* Pressurized piping
	• *Perform:* Continuously
	  ○ *Leak Rate:* 3 gph (with line pressure at 10 psi within one hour)
	• *Inspect for Connectivity (as applicable):* Every 30 days
	  ○ Tank Monitoring Console
	  ○ Electronic Line Leak Detector (ELLD)
	• *Inspect for Operability/Test for Functionality (as applicable):* Annually
	  ○ Tank Monitoring Console
	  ○ Electronic or Mechanical Line Leak Detector (ELLD or MLLD)
	• *Retain Records:* For three years		

Line Tightness Testing [LTT]	• *Perform and Record Results:*
	  ○ Annually (for pressurized piping)
	  ○ Every three years (for non-exempt suction piping)
	  ○ *Leak Rate:* 0.1 gph (at 1.5 times the operating line pressure)
	• *Retain Records:* For three years or until the next test, whichever is later
	  ○ *Send DEC Copies:* Within 30 days after the test is performed		

Vapor/ Groundwater Monitoring [VGM]	• *Perform and Record Results:* Weekly / Continuously
	• *Inspect for Connectivity (as applicable):* Every 30 days
	  ○ Tank Monitoring Console
	  ○ (Well) Sensors
	• *Inspect for Operability (as applicable):* Annually
	  ○ Tank Monitoring Console
	  ○ (Well) Sensors
	  ○ Handheld Electronic Sampling Equipment
	• *Retain Records:* For three years
	  ○ *Retain Site Assessment Report:* While LD method is in use		

Interstitial Monitoring [INS]	• *Required for:*
	  ○ Cat. 1/2 piping that are double-walled
	  ○ Cat. 3 piping (which must be double-walled)
	• *Perform and Record Results:* Weekly / Continuously
	• *Inspect for Connectivity (as applicable):* Every 30 days
	  ○ Tank Monitoring Console
	  ○ Probes/Sensors
	• *Inspect for Operability (as applicable):* Annually
	  ○ Tank Monitoring Console
	  ○ Sensors
	  ○ Vacuum Pumps/Pressure Gauges
	• *Retain Records:* For three years		

Statistical Inventory Reconciliation [SIR]	• *Acceptable for:* Piping associated with metered dispensers • *Take Measurements:* Daily (for ~30 calendar days) • *Perform and Record Results:* Weekly ○ *Leak Rate:* 0.2 gph • *Retain Records:* For three years		

Alternative Tank and Piping Leak Detection

Leak monitoring for field-constructed tanks (FCTs) with a design capacity greater than 50,000 gallons[119] as well as any associated piping, may be challenging given conventional leak detection methods. Such tanks/piping may then comply with the following alternative requirements[120] (as applicable) in lieu of their equivalent conventional counterparts.

SP2 Tank LD Method	***Cat. 1 FCT (> 50k gal.)[121]***	***Cat. 2 FCT (> 50k gal.)[121]***	***Cat. 3 FCT (> 50k gal.)***

Automatic Tank Gauging [ATG]	• *Perform and Record Results:* Weekly / Continuously
	  ○ *Leak Rate:* 0.2 gph
	• *Inspect for Connectivity:* Every 30 days
	  ○ Tank Monitoring Console
	  ○ Probes
	• *Inspect for Operability:* Annually
	  ○ Tank Monitoring Console
	  ○ Probes
	• *Retain Records:* For three years		

Vapor/ Groundwater Monitoring [VGM]	• *Perform and Record Results:* Weekly / Continuously
	• *Inspect for Connectivity (as applicable):* Every 30 days
	  ○ Tank Monitoring Console
	  ○ (Well) Sensors
	• *Inspect for Operability (as applicable):* Annually
	  ○ Tank Monitoring Console
	  ○ (Well) Sensors
	  ○ Handheld Electronic Sampling Equipment
	• *Retain Records:* For three years
	  ○ *Retain Site Assessment Report:* While LD method is in use		

Interstitial Monitoring [INS]	• *Required for:* Double-walled tanks
	• *Perform and Record Results:* Weekly / Continuously
	• *Inspect for Connectivity (as applicable):* Every 30 days
	  ○ Tank Monitoring Console
	  ○ Probes/Sensors
	• *Inspect for Operability (as applicable):* Annually
	  ○ Tank Monitoring Console
	  ○ Interstitial/Sump Sensors
	  ○ Vacuum Pumps/Pressure Gauges
	• *Retain Records:* For three years		

[119] These tanks were previously deferred under 40 CFR Part 280.

[120] Alternative LD requirements for SP2 FCTs (> 50k gal.) and associated piping are found in 6 NYCRR clauses 613-2.3(b)(1)(i)(*b*) & (ii)(*b*), and subparagraph 2.3(b)(2)(iii), respectively.

[121] For Cat. 1/2 FCTs (> 50k gal.) and associated Cat. 1/2/3 piping, facilities may use another LD method not explicitly mentioned in 6 NYCRR subdivision 613-2.3(c)/(d) if: the method is demonstrated to be as effective as those listed/required in the regulations; and DEC approves its use. (DEC is not aware of any other LD methods that meet these criteria at the time of this writing). Inspectors should investigate the registered LD method if listed as "99 – Other".

Tank Tightness Testing *(for FCTs)* ***[TTTF]***	• *Perform and Record Results:* Annually / Biennially / Triennially
	  ○ *Leak Rate:*
	  ▪ 0.5 gph (for annual TTTF)
	  ▪ 0.2 gph (for biennial and triennial TTTF)
	• *Retain Records:* For three years or until the next test, whichever is later
	  ○ *Send DEC Copies:* Within 30 days after the test is performed
	
	Note: TTTF is only valid (as a standalone LD method) when performed annually.	

Automatic Tank Gauging *(for FCTs)* ***[ATGF]***	• *Perform and Record Results:* Weekly / Continuously
	  ○ *Leak Rate:*
	  ▪ 2 gph (when performed alongside biennial TTTF)
	  ▪ 1 gph (when performed alongside triennial TTTF)
	• *Inspect for Connectivity:* Every 30 days
	  ○ Tank Monitoring Console
	  ○ Probes
	• *Inspect for Operability:* Annually
	  ○ Tank Monitoring Console
	  ○ Probes
	• *Retain Records:* For three years
	
	Note: ATGF is only valid when performed alongside (biennial or triennial) TTTF.	

Vapor Monitoring w/ Tracer *(for FCTs)* ***[VMTF]***	• *Perform and Record Results:* Annually
	  ○ *Leak Rate:* 0.1 gph
	• *Inspect for Connectivity (as applicable):* Every 30 days
	  ○ Tank Monitoring Console
	  ○ (Well) Sensors
	• *Inspect for Operability (as applicable):* Annually
	  ○ Tank Monitoring Console
	  ○ (Well) Sensors
	  ○ Handheld Electronic Sampling Equipment
	• *Retain Records:* For three years
	  ○ *Retain Site Assessment Report:* While LD method is in use	

Inventory Control *(for FCTs)* ***[INCF]***	• *Take Measurements:* Daily (for 30 calendar days)
	• *Perform and Record Results:* Every 30 days, in accordance with DoD Manual 4140.25, Vol. 9
	  ○ *Leak Rate:* ≤ 0.5% of flowthrough
	  ○ *Allowable Variance (%):*
	  ▪ *Aviation gasoline, motor gasoline (e.g., regular, and unleaded automotive gasoline):* 0.50%
	  ▪ *Turbine fuel, aviation jet propellant 4 (JP4):* 0.30%
	  ▪ *Jet fuel, distillates, residuals (e.g., turbine fuel, aviation jet propellant 5 and 8 (JP5 and JP8); diesel fuel, grade 2-D5000, dyed red; kerosene grade number 2-K):* 0.25%
	• *Retain Records:* For three years
	
	Note: INCF is only valid when performed alongside VGM or (annual) TTTF.	

SP2 Piping LD Method[121]	***Cat. 1 Piping*** ***(associated with FCTs > 50k gal.)***	***Cat. 2 Piping*** ***(associated with FCTs > 50k gal.)***	***Cat. 3 Piping*** ***(associated with FCTs > 50k gal.)***

Automatic Line Leak Detector [ALLD]	• *Acceptable for:* Pressurized piping
	• *Perform:* Continuously
	  ○ *Leak Rate:* 3 gph (with line pressure at 10 psi within one hour)
	• *Inspect for Connectivity (as applicable):* Every 30 days
	  ○ Tank Monitoring Console
	  ○ Electronic Line Leak Detector (ELLD)
	• *Inspect for Operability/Test for Functionality (as applicable):* Annually
	  ○ Tank Monitoring Console
	  ○ Electronic or Mechanical Line Leak Detector (ELLD or MLLD)
	• *Retain Records:* For three years		

Line Tightness Testing [LTT]	• *Perform and Record Results:*
	  ○ Annually (for pressurized piping)
	  ○ Every three years (for non-exempt suction piping)
	  ○ *Leak Rate:* 0.1 gph (at 1.5 times the operating line pressure)
	• *Retain Records:* For three years or until the next test, whichever is later
	  ○ *Send DEC Copies:* Within 30 days after the test is performed		

Vapor/ Groundwater Monitoring [VGM]	• *Perform and Record Results:* Weekly / Continuously
	• *Inspect for Connectivity (as applicable):* Every 30 days
	  ○ Tank Monitoring Console
	  ○ (Well) Sensors
	• *Inspect for Operability (as applicable):* Annually
	  ○ Tank Monitoring Console
	  ○ (Well) Sensors
	  ○ Handheld Electronic Sampling Equipment
	• *Retain Records:* For three years
	  ○ *Retain Site Assessment Report:* While LD method is in use		

Interstitial Monitoring [INS]	• *Required for:* Double-walled piping
	• *Perform and Record Results:* Weekly / Continuously
	• *Inspect for Connectivity (as applicable):* Every 30 days
	  ○ Tank Monitoring Console
	  ○ Probes/Sensors
	• *Inspect for Operability (as applicable):* Annually
	  ○ Tank Monitoring Console
	  ○ Sensors
	  ○ Vacuum Pumps/Pressure Gauges
	• *Retain Records:* For three years		

Bulk Piping Tightness Testing *(for FCT-associated piping)* ***[BTTF]***	• *Perform and Record Results:* Semiannually / Annually
	  ○ *Leak Rate:*
	  ▪ *Piping Segment Volume (PSV) < 50k gal.:*
	  ⸸ 1.0 gph (for semiannual BTTF)
	  ⸸ 0.5 gph (for annual BTTF)
	  ▪ *50k gal. ≤ PSV < 75k gal.:*
	  ⸸ 1.5 gph (for semiannual BTTF)
	  ⸸ 0.75 gph (for annual BTTF)
	  ▪ *75k gal. ≤ PSV < 100k gal.:*
	  ⸸ 2.0 gph (for semiannual BTTF)
	  ⸸ 1.0 gph (for annual BTTF)
	  ▪ *PSV ≥ 100k gal.*
	  ⸸ 3.0 gph (for semiannual BTTF)
	  ⸸ 1.5 gph (for annual BTTF)
	• *Retain Records:* For three years or until the next test, whichever is later
	  ○ *Send DEC Copies:* Within 30 days after the test is performed		

Vapor Monitoring w/ Tracer *(for FCT-associated piping)* ***[VMTF]***	• *Perform and Record Results:* Annually
	  ○ *Leak Rate:* 0.1 gph
	• *Inspect for Connectivity (as applicable):* Every 30 days
	  ○ Tank Monitoring Console
	  ○ (Well) Sensors
	• *Inspect for Operability (as applicable):* Annually
	  ○ Tank Monitoring Console
	  ○ (Well) Sensors
	  ○ Handheld Electronic Sampling Equipment
	• *Retain Records:* For three years
	  ○ *Retain Site Assessment Report:* While LD method is in use		

Inventory Control *(for FCT-associated piping)* ***[INCF]***	• *Take Measurements:* Daily (for 30 calendar days)
	• *Perform and Record Results:* Every 30 days, in accordance with DoD Manual 4140.25, Vol. 9
	  ○ *Leak Rate:* ≤ 0.5% of flowthrough
	  ○ *Allowable Variance (%):*
	  ▪ *Aviation gasoline, motor gasoline (e.g., regular, and unleaded automotive gasoline):* 0.50%
	  ▪ *Turbine fuel, aviation jet propellant 4 (JP4):* 0.30%
	  ▪ *Jet fuel, distillates, residuals (e.g., turbine fuel, aviation jet propellant 5 and 8 (JP5 and JP8); diesel fuel, grade 2-D5000, dyed red; kerosene grade number 2-K):* 0.25%
	• *Retain Records:* For three years
	
	Note: INCF is only valid when performed alongside VGM or BTTF (to leak rates for semiannual testing).

Issues

- **Compartmented Tanks, Siphoned Tanks, and Tanks with Manifolded Piping**

  LD methods must account for any special tank setups. Each compartment in a compartmented tank is treated as a separate tank because petroleum levels in these compartments do not equilibrate or interact in any way – as such, each compartment may need its own leak detection method/equipment (depending on the method/equipment).

  Siphoned tanks (i.e., tanks connected via piping that acts as a siphon) are treated as a single tank as petroleum levels in siphoned tanks equilibrate; however, these tanks must have separate leak detection methods (unless vapor/groundwater monitoring is used). The siphon between these tanks may need to be broken to perform proper leak monitoring, depending on the LD method employed.

  Tanks with manifolded piping (i.e., tanks with piping connected downstream of their respective submersible pumps, supplying a single combined pipe) generally behave like independent tanks: the tank volumes are not combined when in the tanks, and a failure in either tank will not affect the amount of product in the other tank. Depending on the LD method, the tanks and piping may require separate leak detection equipment (e.g., interstitial monitoring), but they may also simply have to be accounted for in the LD method (e.g., inventory monitoring – calculations will have to account for the petroleum being dispensed as if it was coming from a single tank).

- **Supplemental Leak Detection Methods/Equipment**

  Additional LD methods (beyond what is mandatory) may be utilized, but facilities must include them in the PBS registration (as space allows). These supplementary LD methods must be maintained and operated in accordance with all pertinent leak detection requirements and are also subject to requirements pertaining to (suspected) spill reporting. However, connectivity and operability inspection requirements do not apply to supplementary LD methods.

- **Check Valve Placement for Suction Piping**

  Facilities are responsible for providing evidence that they have safe suction piping (based on the placement of their check valves) and are therefore exempt from piping leak monitoring. Installation records should have this information and be available at the time of inspection.

- **Gravity-Fed/Gravity Return Piping**

  Piping in which petroleum moves by gravity (i.e., gravity-fed/gravity return piping) is generally treated as non-exempt/American suction piping under the leak detection requirements, though they may apply differently depending on the location/type of pump used and the pathway of the spill in case of piping failure. Setups where the spill would drain back into the tank act as safe/European suction piping and are exempt from the leak monitoring requirements; any other piping that has either STPs or suction pumps must comply with requirements for either pressurized or non-exempt suction piping requirements, respectively.

- **Siphon Bars**

  Siphon bars (i.e., piping connecting siphoned tanks) are set up without check valves to allow petroleum to flow both ways in the piping; in addition, petroleum flows at less than atmospheric pressure through the piping, which itself is sloped such that the petroleum drains to one or both tanks in the event of a leak. Siphon bars are then considered to be safe suction piping and not required to have leak detection.

- **Leak Detection for Piping Connected to Satellite Dispensers**

  Dispensers may be configured such that there is no direct connection to the tank; the line feeding these satellite dispensers split off from piping connected to a different dispenser. Piping connected to satellite dispensers are still considered to be part of the tank system and are subject to leak detection requirements.

- **Extent of Weekly Leak Detection Records to be Reviewed**

  Facilities must generally keep the last three years' worth of records at any given time (unless the tank has been in service for less than three years), but inspectors are advised to review at least the last 30 days' worth of weekly leak detection records. Inspectors have the discretion to review more/less records as necessary depending on the facility's compliance history and whether any spills are suspected.

- **Factors that Affect Level Readings/Daily Measurements and Calculations**

  Inspectors should consider the following issues as possible sources of errors when reviewing records for inventory monitoring [INV]/inventory control [INCF], manual tank gauging [MTG], and statistical inventory reconciliation [SIR] records:

  - *Tank flexion* – Tanks (especially those made of fiberglass-reinforced plastic, or bigger/newer steel tanks made of thinner material) may warp during deliveries or when a compartment (in a compartmented tank) has significantly more petroleum than another. This is not necessarily a violation but is indicative of uneven stresses being applied to the tank, which could lead to permanent damage to the tank – and even a release – if left uncorrected.
  - *Tank tilt* – Tanks are rarely perfectly level when installed and can gain tilt over time as they settle in the ground. This tilt should be constant when looking at inventory records over time. A new tank chart, which allows for the conversion of stick readings to volume, may be required.
  - *Wrong tank chart* – Proper conversion of level readings to volume inside the tank requires the use of the correct tank chart for the UST in question.
  - *Temperature variations* – The temperature of a fresh petroleum delivery may change due to either weather conditions or mixing with petroleum of a different temperature in the tank. This leads to either an expansion or contraction of the petroleum, noted on the daily measurements as an unusual gain on the day of the delivery that normalizes in the next few days.
  - *Condition of the measuring equipment* – Measuring equipment must be in good working order (i.e., have legible markings, accurate to 1/8"). Gauging sticks must be whole/unbroken, straight, and long enough to reach the bottom of the tank; a button must also be at the bottom of the stick. Level gauges must be calibrated properly and be compatible with the stored petroleum.
  - *Delivery/receipt errors* – Inaccurate delivery records (e.g., deliveries that do not match the order, cross-drops, etc.) appear as substantial losses or gains. Facilities should compare the calculated delivery volume (i.e., the difference between stick readings before and after a delivery) to the listed gross delivery volume on the receipt; discrepancies between both values should be considered during reconciliation.

- *Calibration* – Dispenser meters (i.e., totalizers) for motor fuel/kerosene sold at retail facilities must be calibrated, as verified by the presence of a Department of Consumer Affairs (DCA) sticker for NYC facilities, or a Bureau of Weights and Measures sticker for facilities elsewhere in NYS.
- *Blending* – Many gas stations blend high- and low-octane gasoline at the dispenser to produce mid-grade gasoline. Inventory records that show a steady gain in one grade and a loss in another may indicate an issue with either the blending formula/ratio or the blending unit beneath the dispenser. Inspectors should compare the records for high- and low-octane gasoline to find offsetting losses and gains.
- *Arithmetic errors* – This is fairly common with inventory reconciliation performed manually. Inspectors should spot-check records to ensure that proper arithmetic calculations are being performed.
- *Fabricated data* – Inspectors should look for stick readings or calculated values that appear to be fabricated (e.g., stick readings that occur more than once but correspond to different petroleum volumes). This is commonly observed at facilities that use rolling ten-day periods (i.e., reconciliation performed more often than every ten days). Measurements for the same dates in multiple ten-day periods should be identical.

Any issue that ultimately affects the leak monitoring results must be investigated by the facility[122]; however, not all issues are within the facility's control, and while technically considered violations, these may not warrant penalties and/or a consent order.

- **Access to the Tank Monitoring Console**

  Inaccessible tank consoles cannot convey alarms to anyone who needs to respond to the alarm/possible spill (i.e., Class C Operator[123]). The console should not be in a room with restricted access, nor should the space in front of the console be used as storage, as these hamper a staff person's ability to review the console in a timely manner and delays their response to possible/suspected spills.

- **Reviewing Records/Alarms on the Tank Monitoring Console**

  Inspectors, by default, should have the facility staff operate the console to produce the information/records that the inspector wishes to review. Inspectors should step in only when:

  - the facility representative is incapable of operating the console (i.e., is not an operator);
  - the facility representative has given the inspector permission to access the console; AND
  - the inspector has been trained on the use of that specific console make/model.

- **Connectivity Between the Tank Monitoring Console and Probes/Floats/Sensors/ELLDs**

  Tank monitoring consoles and their electronic attachments (for leak detection) are subject to 30-day connectivity inspections to prove that the attachment triggers the necessary alarm on the console accordingly. This requirement can be satisfied in modern consoles by running a built-in sensor status report, which returns a result that says, "All Functions Normal" (or some equivalent language) if the monitoring system has connectivity. Connectivity for older monitoring systems may be proven in accordance with the console manufacturer's specific instructions.

[122] Leak investigations for SP2 tank systems must be conducted in accordance with 6 NYCRR subdivision 613-2.4(d).
[123] See **Operator Training** on p. 59.

- **Records Printed on Thermal Paper**

  Tank monitoring consoles normally have printers with thermal paper/ticker tape, and any records on such paper fade over time. Having faded leak detection records is a violation, but these may not warrant penalties and/or a consent order, especially for older records. Facilities are advised to save digital or hard copies of those records (e.g., take pictures/scans/photocopies of the tape, save data onto a digital spreadsheet, maintain the data in the console, copy by hand) to prove compliance with the leak detection requirements.

Questions

LD_trc	***Tank LD Methods: all LD methods that apply to the tank – including those required and any supplementary methods being performed – should be selected.***
INV	» Inventory Monitoring
MTG	» Manual Tank Gauging
ATG	» Automatic Tank Gauging
VGM	» Vapor/Groundwater Monitoring
INS	» Interstitial Monitoring
SIR	» Statistical Inventory Reconciliation
TTTF	» Tank Tightness Testing (FCTs)
ATGF	» Automatic Tank Gauging (FCTs)
VMTF	» Vapor Monitoring w/ Tracer (FCTs)
INCF	» Inventory Control (FCTs)
N	» *613-2.3(a)(1):* The tank is not being monitored for leaks. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid tank leak detection method.
XP	» Leak detection is not required because the tank system is OOS and the (associated) tank is currently empty.
LD_tri	***Is the registered tank LD method(s) accurate?***
Y	» No issues were found under this question.
IN	» *613-1.9(a)(4):* The registered tank leak detection method(s) is inaccurate. » *Note(s):* This Response does not include expired facility registrations, inaccurate facility information, unregistered tanks, or unregistered facilities; such violations should be captured under Question **REG_info**. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must correct the site registration online to reflect the tank leak detection method(s). » *Additional Action(s):* The inspector should note the specific inaccuracy with the tank leak detection under Question **LD_tnov**, to include it in the list of registration discrepancies (in the NOV) that need to be corrected.
LD_tnov	***Which tank LD method(s) should be noted in the NOV?*** ***Note: two methods (maximum) should be selected to be on the registration.***

LD_prc	***Piping LD Methods: all LD methods that apply to the piping – including those required and any supplementary methods being performed – should be selected. Nothing should be selected if there is no piping associated with the tank.***
VGM	» Vapor/Groundwater Monitoring
INS	» Interstitial Monitoring
SIR	» Statistical Inventory Reconciliation
ALLD	» Automatic Line Leak Detector
LTT	» Line Tightness Testing
BTTF	» Bulk Piping Tightness Testing (FCTs)
VMTF	» Vapor Monitoring w/ Tracer (FCTs)
INCF	» Inventory Control (FCTs)
N	» *613-2.3(a)(1):* The piping is not being monitored for leaks. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid piping leak detection method.
NLLD	» *613-2.3(b)(2)(i)(a)(1) / 2.3(b)(2)(i)(b)(1) / 2.3(b)(2)(i)(c):* The pressurized piping is not equipped with the required automatic line leak detector. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid ALLD.
XP	» Leak detection is not required because the tank system is OOS and the (associated) tank is currently empty.
XT	» Piping leak detection is not required because there are no corresponding LD requirements.
LD_pri	***Is the registered piping LD method(s) accurate?***
Y	» No issues were found under this question.
IN	» *613-1.9(a)(4):* The registered piping leak detection method(s) is inaccurate. » *Note(s):* This Response does not include expired facility registrations, inaccurate facility information, unregistered tanks, or unregistered facilities; such violations should be captured under Question **REG_info**. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must correct the site registration online to reflect the piping leak detection method(s). » *Additional Action(s):* The inspector should note the specific inaccuracy with the piping leak detection under Question **LD_pnov**, to include it in the list of registration discrepancies (in the NOV) that need to be corrected.
LD_pnov	***Which piping LD method(s) should be noted in the NOV?*** ***Note: two methods (maximum) should be selected to be on the registration.***

Options

Inventory Monitoring [INV] and Inventory Control (for FCTs/FCT-Associated Piping) [INCF]

Inventory monitoring – also known as ten-day reconciliation – and inventory control are mathematical (i.e., non-electronic) leak detection methods performed periodically over specified periods of time to track discrepancies between how much petroleum is in the tank system versus how much should be in the tank system, allowing operators to perform leak detection even when electronic LD equipment is malfunctioning. However, both methods are still considered only supplementary to – not substitutes for – other (required) leak detection methods, as they lose their effectiveness/accuracy with increased throughput and tank design capacity.

The following illustrates the differences between inventory monitoring performed for conventional tanks, and inventory control performed for field-constructed tanks with a design capacity greater than 50,000 gallons.

	Inventory Monitoring [INV]	***Inventory Control (for FCTs and FCT-Associated Piping) [INCF]***

SP2 Leak Detection:
 	
Differences between Inventory Methods
	• *Required for:* Cat. 1/2/3 tanks storing motor fuel/kerosene for resale[116]
	• *Take Measurements:* Daily (for ten calendar days)
	• *Perform and Record Results:* Every ten days
	  ○ *Allowable Variance (%):* 0.75%
		• *Acceptable for:*
		  ○ Cat. 1/2 field-constructed tanks (FCTs) with a design capacity greater than 50,000 gallons
		  ○ Cat. 1/2/3 piping associated with FCTs > 50k gal.
		• *Take Measurements:* Daily (for 30 calendar days)
		• *Perform and Record Results:* Every 30 days, in accordance with DoD Manual 4140.25, Vol. 9
		  ○ *Leak Rate:* ≤ 0.5% of flowthrough
		  ○ *Allowable Variance (%):*
		  ▪ *Aviation gasoline, motor gasoline (e.g., regular, and unleaded automotive gasoline):* 0.50%
		  ▪ *Turbine fuel, aviation jet propellant 4 (JP4):* 0.30%
		  ▪ *Jet fuel, distillates, residuals (e.g., turbine fuel, aviation jet propellant 5 and 8 (JP5 and JP8); diesel fuel, grade 2-D5000, dyed red; kerosene grade number 2-K):* 0.25%
		
		Note: INCF is only valid when performed alongside:
		• vapor/groundwater monitoring [VGM];
		• (annual) tank tightness testing for FCTs [TTTF]; or
		• bulk piping tightness testing [BTTF]
		(to leak rates for semiannual testing for piping).

INV/INCF records must be retained for (at least) three years and have the following information.

	Inventory Monitoring [INV] and Inventory Control (for FCTs and FCT-Associated Piping) [INCF]

SP2 LD Records:
 	
Required Information
	• Tank ID number
	• Daily measurements taken at roughly the same time each operating day (when the tank is not dispensing):
	  ○ Petroleum delivered to the tank (i.e., gross volume in gallons)
	  ○ Petroleum dispensed from the tank (in gallons)
	  ○ Petroleum level in the tank (measured to the nearest 1/8", then converted to gallons using the tank chart)
	  ○ Water level in the tank (measured to the nearest 1/8")
	• Date/time of the measurements
	• Daily calculations for each operating day:
	  ○ Book inventory = [petroleum level in the tank <u>from the previous day</u>] + [petroleum delivered to the tank] – [petroleum dispensed from the tank]
	  ○ Overage/shortage = [petroleum level in the tank <u>for that day</u>] – [book inventory]
	• Total values of each of the following (for the entire ten-day/30-day period):
	  ○ Overage/shortage
	  ○ Petroleum delivered to the tank
	  ○ Petroleum dispensed from the tank
	• Tank design capacity
	• Allowable variance, equal to ____% of the largest of the following values[124]:
	  ○ Total petroleum delivered to the tank
	  ○ Total petroleum dispensed from the tank
	  ○ Tank design capacity
	• A comparison between total overage/shortage and the allowable variance

A leak is suspected when:

- the tank is shown to have recurring water levels over the ten-day/30-day period;
- the tank is shown to have water levels in excess of one inch[125];
- the tank is shown to have suddenly lost petroleum; or
- the total daily overage/shortage is greater than the allowable variance.

Any of the first three scenarios must be reported to the Spill Hotline within <u>two hours</u> after discovery, unless the (primary) tank is found to be defective but not leaking and is immediately repaired or replaced following discovery. The fourth scenario must be reported to the Spill Hotline within <u>48 hours</u> after discovery, unless the results are explained by inaccurate recordkeeping, temperature variations, or other factors not related to leaks – in these cases, the facility must also keep records explaining the false-positive results, for at least three years.

Gauging sticks used for INV/INCF are also subject to annual walkthrough inspections[109].

Issues

- **Operating Days vs. Off Days**

  Daily measurements for inventory monitoring/control must be taken on "operating days," or days when the tank received and/or dispensed petroleum. Facilities should ensure that the tank did not lose petroleum on their off days by comparing the stick readings at the end of the last operating day and at the beginning of the first operating day afterwards, but off days should be crossed out on the inventory spreadsheet (and not filled out with zeroes that could be mistaken for measurements). The reconciliation should be performed for that ten-day period per the norm but with the smaller number of data/measurements.

[124] High-traffic facilities (e.g., truck stops that operate 24/7) and high-capacity tank systems will have significant allowable variances that almost always dwarf the daily overage/shortage.
[125] 1 NYCRR subdivision 224.7(c): Water levels exceeding 1 inch (2.5 cm) within a tank storing automotive fuel, must be removed within 48 hours after the water level was first measured.

- **Frequency of Reconciliation**

  Inventory reconciliation must be performed for the calendar days – including off days – within the required (ten-day or 30-day) period but it may be done more frequently than the period if every calendar day is covered in at least one period. However, measurements for a given day must be the same when covered in multiple periods/reconciliation.

- **Using Tank Monitoring Consoles and Probes/Floats to Perform Inventory Monitoring/Control**

  Electronic tank monitoring systems may be used to take daily measurements for inventory monitoring/control, but these must be properly configured/calibrated, be compatible with the stored petroleum, and have the necessary probes/floats to be considered compliant. Such systems are subject to 30-day walkthrough inspections[109], as well as (30-day) connectivity inspections and (annual) operability inspections[126].

- **UST Systems that No Longer Need Inventory Monitoring**

  The previous iteration of the PBS regulations had a broader applicability of inventory monitoring. Facilities with tank systems that were previously required to perform inventory monitoring but no longer need it under the current PBS regulations, may discard the inventory monitoring records for those tank systems.

Questions

INV	***Inventory Monitoring***
INV_val	***Is this LD method valid for the tank system?*** ***Note: inventory monitoring is required for SP2/SP5 UST systems storing motor fuel or kerosene that is sold as part of a commercial transaction.***
Y	» No issues were found under this question.
SM	» Inventory monitoring either is not required for the tank or supplements a different LD method that is being used to meet leak detection requirements.
INV_ld	***Is the LD method being performed periodically?***
Y	» No issues were found under this question.
NL ***[SP2/SP5]***	» *613-2.3(b)(1)(i)(a) / 2.3(b)(1)(ii)(a) / 2.3(b)(1)(iii) / 2.3(c)(1)(vii):* Inventory monitoring measurements are not being reconciled. » *Note(s):* Reconciliation records are the primary evidence that inventory monitoring is being performed; if monitoring is being performed, but records are not being retained for at least three years, Response **NR** under Question **INV_ldr** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records/results of) inventory monitoring for 30 days.
PL ***[SP2/SP5]***	» *613-2.3(b)(1)(i)(a) / 2.3(b)(1)(ii)(a) / 2.3(b)(1)(iii) / 2.3(c)(1)(vii):* Inventory monitoring measurements are not being reconciled at least every ten days. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records/results of) inventory monitoring for 30 days.

[126] See **Automatic Tank Gauging [ATG]** on p. 91.

INV_ldr	***Are the LD records being retained?*** ***Note: records must be retained for 3 years.***
Y	» No issues were found under this question.
NR ***[SP2/SP5]***	» *613-2.3(c)(1)(i) / 2.3(g)(1):* Inventory monitoring measurements are not being recorded for each operating day, or records are not being retained for at least three years. » *Note(s):* Reconciliation records are the primary evidence that inventory monitoring is being performed; if the records are missing, monitoring is likely not being performed (and Response **NL** under Question **INV_ld** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the monitoring records for the last 30 days, or perform (and submit the records/results of) inventory monitoring for 30 days.
INV_ldc	***Was the reconciliation complete/adequate?***
Y	» No issues were found under this question.
NWM ***[SP2/SP5]***	» *613-2.3(c)(1)(vi):* Water levels are not being recorded as part of the inventory monitoring measurements. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records/results of) inventory monitoring for 30 days and include the corresponding the tank bottom water measurements.
IM ***[SP2/SP5]***	» *613-2.3(c)(1)(vii):* Inventory monitoring measurements are not being reconciled properly. » *Note(s):* This includes: - not having ten calendar days per reconciliation interval - not performing reconciliation at least every ten days; not including each calendar day in at least one interval - having different measurements for the same operating day (when in overlapping reconciliation intervals) » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records/results of) inventory monitoring properly for the last 30 days.
INV_gwo	***Is the equipment in good working order?***
Y	» No issues were found under this question.
8M	» *613-1.12 / 2.3(c)(1)(ii):* The inventory monitoring equipment is not accurate to 1/8” (over the full range of the tank's height). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must submit documentation showing that equipment capable of accurate measurement is in use.
TC	» *613-1.12 / 2.3(c)(1)(v):* The dispenser meter (i.e., totalizer) is not properly calibrated. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must properly calibrate the totalizer and perform (and submit the records/results of) inventory monitoring for 30 days with the properly calibrated meter.

INCF	Inventory Control (FCTs)
INCF_val	***Is this LD method valid for the tank system?*** ***Note: inventory control is a valid LD method only for SP2 (or SP5): Cat. 1/2 field-constructed USTs with a design capacity greater than 50,000 gallons; and piping associated with field-constructed USTs with a design capacity greater than 50,000 gallons. (This method must be used in conjunction with either vapor/groundwater monitoring or tightness testing of the FCT/bulk piping to be acceptable.)***
Y	» No issues were found under this question.
NVT	» *613-2.3(b)(1):* Inventory control (with weekly vapor/groundwater monitoring or annual FCT tightness testing) is not a valid leak detection method for the tank (and there are no other valid leak detection methods in use). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid leak detection method.
SMT	» Inventory control either is not required for the tank or supplements a different LD method that is being used to meet leak detection requirements.
NVP	» *613-2.3(b)(2):* Inventory control (with weekly vapor/groundwater monitoring or annual/semiannual bulk piping tightness testing) is not a valid leak detection method for the piping (and there are no other valid leak detection methods in use). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid leak detection method.
SMP	» Inventory control either is not required for the piping or supplements a different LD method that is being used to meet leak detection requirements.
INCF_ld	***Is the LD method being performed periodically?***
Y	» No issues were found under this question.
NLT [SP2/SP5]	» *613-2.3(b)(1)(i)(b) / 2.3(b)(1)(ii)(b) / 2.3(e)(4)(i):* Inventory control measurements are not being reconciled for the tank. » *Note(s):* Reconciliation records are the primary evidence that inventory control is being performed; if inventory control is being performed, but records are not being retained for at least three years, Response **NRT** under Question **INCF_ldr** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the records/results of) inventory control for 30 days, or install/utilize (and submit documentation of) a valid leak detection method.
PLT [SP2/SP5]	» *613-2.3(b)(1)(i)(b) / 2.3(b)(1)(ii)(b) / 2.3(e)(4)(i):* Inventory control measurements are not being reconciled for the tank at least every 30 days. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the records/results of) inventory control for 30 days, or install/utilize (and submit documentation of) a valid leak detection method.
NLP [SP2/SP5]	» *613-2.3(b)(2)(iii) / 2.3(f)(3)(i):* Inventory control measurements are not being reconciled for the piping. » *Note(s):* Reconciliation records are the primary evidence that inventory control is being performed; if inventory control is being performed, but records are not being retained for at least three years, Response **NRP** under Question **INCF_ldr** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the records/results of) inventory control for 30 days, or install/utilize (and submit documentation of) a valid leak detection method.
PLP [SP2/SP5]	» *613-2.3(b)(2)(iii) / 2.3(f)(3)(i):* Inventory control measurements are not being reconciled for the piping at least every 30 days. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the records/results of) inventory control for 30 days or install/utilize (and submit documentation of) a valid leak detection method.

INCF_ldr	***Are the LD records being retained?*** ***Note: records must be retained for 3 years.***
Y	» No issues were found under this question.
NRT ***[SP2/SP5]***	» *613-2.3(g)(1):* Inventory control measurements are not being recorded for each operating day, or records are not being retained (for the tank) for at least three years. » *Note(s):* Reconciliation records are the primary evidence that inventory control is being performed; if the records are missing, inventory control is likely not being performed (and Response **NLT** under Question **INCF_ld** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the inventory control records for the last 30 days, or perform (and submit the records/results of) inventory control for 30 days.
NRP ***[SP2/SP5]***	» *613-2.3(g)(1):* Inventory control measurements are not being recorded for each operating day, or records are not being retained (for the piping) for at least three years. » *Note(s):* Reconciliation records are the primary evidence that inventory control is being performed; if the records are missing, inventory control is likely not being performed (and Response **NLP** under Question **INCF_ld** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the inventory control records for the last 30 days, or perform (and submit the records/results of) inventory control for 30 days.
INCF_ldc	***Was the reconciliation complete/adequate?***
Y	» No issues were found under this question.
NWMT ***[SP2/SP5]***	» *613-2.3(e)(4)(i):* Water levels are not being recorded as part of the inventory control measurements for the tank. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records/results of) inventory control for 30 days and include the corresponding the tank bottom water measurements.
IMT ***[SP2/SP5]***	» *613-2.3(e)(4)(i):* Inventory control measurements are not being reconciled properly for the tank. » *Note(s):* This includes: - not having ten calendar days per reconciliation interval - not performing reconciliation at least every ten days; not including each calendar day in at least one interval - having different measurements for the same operating day (when in overlapping reconciliation intervals) » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records/results of) inventory control properly for the last 30 days.
NWMP ***[SP2/SP5]***	» *613-2.3(f)(3)(i):* Water levels are not being recorded as part of the inventory control measurements for the piping. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records/results of) inventory control for 30 days and include the corresponding the piping water measurements.
IMP ***[SP2/SP5]***	» *613-2.3(f)(3)(i):* Inventory control measurements are not being reconciled properly for the piping. » *Note(s):* This includes: - not having ten calendar days per reconciliation interval - not performing reconciliation at least every ten days; not including each calendar day in at least one interval - having different measurements for the same operating day (when in overlapping reconciliation intervals) » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records/results of) inventory control properly for the last 30 days.

INCF_gwo	*Is the equipment in good working order?*
Y	» No issues were found under this question.
8M	» *613-1.12 / 2.3(e)(4)(i) / 2.3(f)(3)(i):* The inventory control equipment is not accurate to 1/8” (over the full range of the tank system component's height). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must submit documentation showing that equipment capable of accurate measurement is in use.
TC	» *613-1.12 / 2.3(e)(4)(i) / 2.3(f)(3)(i):* The dispenser meter (i.e., totalizer) is not properly calibrated. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must properly calibrate the totalizer and perform (and submit the records/results of) inventory control for 30 days with the properly calibrated meter.

Manual Tank Gauging [MTG]

Manual tank gauging is a leak detection method that uses either a handheld gauging stick or a level gauge to measure significant changes to petroleum levels inside a tank, over a period when petroleum is neither added nor dispensed from the tank. However, this method does not detect leaks until the test is conducted; and after the leak has become a release.

MTG is restricted to tanks that are:

- cylindrical, horizontally placed, Cat. 1 (single-walled) underground tanks of relatively small design capacities and specific tank diameters; and
- located at facilities with low traffic/throughput since the tank must be undisturbed for the duration of the test.

The table below shows MTG test durations and allowable variances to petroleum levels within the tank, depending on tank design capacity and diameter.

UST Design Capacity/Diameter	***Manual Tank Gauging [MTG]***		
	Minimum Test Duration	***Weekly Standard (One Test)***	***Monthly Standard (Average of Four Tests)***
≤550 gal	36 hrs	10 gal	5 gal
>550 and ≤1000 gal; Diameter = 64”	44 hrs	9 gal	4 gal
>550 and ≤1000 gal; Diameter = 48”	58 hrs	12 gal	6 gal

MTG records must be retained for (at least) three years and have the following information.

	Manual Tank Gauging [MTG]

SP2 LD Records:
 	
Required Information
	• Tank information:
	  ○ Tank ID number
	  ○ Design capacity
	  ○ Diameter
	• Initial data:
	  ○ Two consecutive readings of the petroleum level in the tank (measured to the nearest 1/8”, then converted to gallons using the tank chart) at the <u>start</u> of the test
	  ○ Average of the two petroleum level volumes (in gallons)
	• Final data:
	  ○ Two consecutive readings of the petroleum level in the tank (measured to the nearest 1/8”, then converted to gallons using the tank chart) at the <u>end</u> of the test (i.e., after the required minimum test duration)
	  ○ Average of the two petroleum level volumes (in gallons)
	• Date/time of all initial/final readings
	• Weekly and monthly standards (depending on tank design capacity/diameter)
	• Weekly volume variance (i.e., [initial average petroleum level volume] – [final average petroleum level volume])
	• Monthly volume variance (i.e., average of the absolute values of the last four weekly volume variances)
	• A comparison between:
	  ○ The absolute value of the weekly volume variance and the weekly standard
	  ○ The monthly volume variance and the monthly standard

A leak is suspected when:

- the tank is shown to have suddenly lost petroleum;
- the absolute value of the weekly volume variance is greater than the weekly standard; or
- the monthly volume variance is greater than the monthly standard.

The first scenario must be reported to the Spill Hotline within two hours after discovery, unless the (primary) tank is found to be defective but not leaking and is immediately repaired or replaced following discovery. Either of the last two scenarios must be reported to the Spill Hotline within two hours after discovery, unless the measuring equipment used is shown to be defective and is immediately repaired/replaced/recalibrated, AND additional testing does not confirm the initial results. Facilities are advised to immediately rerun the test using a gauging stick either upon discovery of the suspected leak or when the gauge is suspected to be defective.

Gauging sticks used for MTG are also subject to annual walkthrough inspections[109].

Issues

- **Frequency of Testing**

  MTG must be performed weekly. Frequencies other than weekly are not acceptable because they do not meet the test standards.

- **Using Tank Monitoring Consoles and Probes/Floats to Perform Manual Tank Gauging**

  Electronic tank monitoring systems may be used to perform manual tank gauging, but these must be properly configured/calibrated, be compatible with the stored petroleum, and have the necessary probes/floats to be considered compliant. Such systems are subject to (30-day) connectivity inspections and (annual) operability inspections[126].

Questions

MTG_val	*Is this LD method valid for the tank system?*
Y	» No issues were found under this question.
NV	» *613-2.3(b)(1):* Manual tank gauging is not a valid leak detection method for the tank (and there are no other valid leak detection methods in use). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid leak detection method.
TD [SP2/SP5]	» *613-2.3(c)(2)(v):* The tank does not meet the allowable dimensions for manual tank gauging. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a tank tightness test within 30 calendar days after the date of the NOV.
SM	» Manual tank gauging either is not required for the tank or supplements a different LD method that is being used to meet leak detection requirements.

MTG_ld	***Is the LD method being performed periodically?***
Y	» No issues were found under this question.
NL ***[SP2/SP5]***	» *613-2.3(b)(1)(i)(a):* Manual tank gauging is not being performed. » *Note(s):* Test records are the primary evidence that manual tank gauging is being performed; if tank gauging is being performed, but either the tests are not being recorded or records are not being retained for at least three years, Response **NR** under Question **MTG_ldr** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the records/results of) four weekly manual tank gauging tests AND a tank tightness test, or install/utilize (and submit documentation of) a valid leak detection method.
PL ***[SP2/SP5]***	» *613-2.3(b)(1)(i)(a):* Manual tank gauging is not being performed at least weekly. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the records/results of) four weekly manual tank gauging tests AND a tank tightness test, or install/utilize (and submit documentation of) a valid leak detection method. » *Additional Action(s):* There is no need for the curative measure if the most recent weekly test was performed but a previous one was not; this violation, however, should still be cited.
MTG_ldr	***Are the LD records being retained?*** ***Note: records must be retained for 3 years.***
Y	» No issues were found under this question.
NR ***[SP2/SP5]***	» *613-2.3(g)(1):* Manual tank gauging tests are not being recorded, or records are not being retained for at least three years. » *Note(s):* Test records are the primary evidence that manual tank gauging is being performed; if the records are missing, tank gauging is likely not being performed (and Response **NL** under Question **MTG_ld** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records/results of the last four weekly manual tank gauging tests, or perform (and submit the records/results of) four weekly manual tank gauging tests.
MTG_ldc	***Was the testing complete/adequate?***
Y	» No issues were found under this question.
TD ***[SP2/SP5]***	» *613-2.3(c)(2)(i) / 2.3(c)(2)(iv):* The test does not meet the required minimum duration. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a tank tightness test within 30 calendar days after the date of the NOV.
MTG_gwo	***Is the equipment in good working order?***
Y	» No issues were found under this question.
8M	» *613-1.12 / 2.3(c)(2)(iii):* The manual tank gauging equipment is not accurate to 1/8” (over the full range of the tank's height). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit documentation showing that equipment capable of accurate measurement is in use. In addition, the facility must perform (and submit the results of) a tank tightness test within 30 calendar days after the date of the NOV.

Automatic Tank Gauging [ATG] and Automatic Tank Gauging (for FCTs) [ATGF]

Automatic tank gauging is a leak detection method that consists of a tank console – connected to an electronic probe with a float – that monitors for leaks by conducting two types of tests based on periodic measurements of petroleum levels within the tank:

- Static tests are similar to manual tank gauging (MTG) tests, where weekly measurements are taken before and after a set period of time (often manufacturer-specific but usually 4-5 hours) when the tank is undisturbed. The console is typically programmed to run this test at night when the facility is closed.
- Continuous In-Tank Leak Detection System (CITLDS) tests continuously measure petroleum levels (and temperatures) in the tank throughout the day, to calculate weekly leak rates. These are preferred for high-throughput facilities that operate 24/7 (e.g., truck stops along well-traveled highways).
    - Continuous Statistical Leak Detection (CSLD) tests gather data when the tank is not dispensing any petroleum.
    - Continual reconciliation tests gather data continuously and performs statistical inventory reconciliation (SIR) in the background.

Tank monitoring consoles must be properly calibrated and be capable of detecting leaks (of an appropriate rate) from any portion of the tank that routinely contains petroleum[103]; to this end, the tank should be filled (to its working capacity, if possible), particularly before static tests.

The following illustrates the differences between automatic tank gauging performed for conventional tanks, and field-constructed tanks with a design capacity greater than 50,000 gallons.

SP2 Leak Detection: ***Differences between Automatic Tank Gauging Methods***	***Automatic Tank Gauging [ATG]***	***Automatic Tank Gauging (for FCTs) [ATGF]***

	• *Acceptable for:* Cat. 1 tanks
	• *Perform and Record Results:* Weekly / Continuously
	  ○ *Leak Rate:* 0.2 gph
		• *Acceptable for:* Cat. 1/2 field-constructed tanks (FCTs) with a design capacity greater than 50,000 gallons
		• *Perform and Record Results:* Weekly / Continuously
		  ○ *Leak Rate:*
		  ▪ 2 gph (when performed alongside biennial TTTF)
		  ▪ 1 gph (when performed alongside triennial TTTF)
		
		Note: ATGF is only valid when performed alongside (biennial or triennial) TTTF.

The National Work Group on Leak Detection Evaluations (NWGLDE) website[127] has a list of console makes/models that meet the requirements above.

Records for ATG/ATGF tests must be retained for (at least) three years and have the following information.

SP2 LD Records: ***Required Information***	***Automatic Tank Gauging [ATG] and Automatic Tank Gauging (for FCTs) [ATGF]***	

	• Tank ID number
	• Tank design capacity
	• Date/time of test
	• Petroleum level within the tank at the time of the test
	• Test results (i.e., pass/fail)
		• Console information:
		  ○ Console make/model
		  ○ Type of test conducted
		  ○ Leak rate (i.e., 0.2 gph / 2 gph / 1 gph)

[127] LD equipment manufacturers and testing companies have their products evaluated by a third-party testing company to certify – per the testing protocol created by EPA – that the equipment/test method detects certain leak rates; the manufacturer receives the results of the evaluation and then sends it to the National Work Group on Leak Detection Evaluations (NWGLDE) for inclusion in their website's list of certified equipment/test methods.

A leak is suspected when the tank fails the ATG test. These test results must be reported to the Spill Hotline within two hours after discovery, unless:

- one or more of the equipment (i.e., console, probe/float) is found to be defective and is immediately repaired/replaced/recalibrated, AND additional testing does not confirm the initial results; or
- the results were investigated and determined to be a non-spill event (e.g., caused by filling the tank during testing).

The connectivity and operability of tank monitoring consoles and probes/floats must also be inspected on a regular basis. Inspection records must be retained for (at least) three years and have the following information.

SP2 LD Inspections	***Automatic Tank Gauging Equipment***
(30-Day) Connectivity Inspection	• Tank ID number • Date/time of inspection • Verification that the tank monitoring console and the probe/float are communicating with each other • Any issues identified with the criterion above • Description of actions taken to rectify any issues identified

(Annual) Operability Inspection	• Tank ID number
	• Date/time of inspection
	• Verification of the following:
	  ○ Tank Monitoring Console (or Another System Controller)
	  ▪ Console alarm is functional.
	  ▪ Console's backup battery has power.
	  ▪ Tank monitoring console is properly configured/calibrated.
	  ○ Probe/Float
	  ▪ There is no residual buildup on the probe/float.
	  ▪ The float moves freely across the length of the probe stem.
	  ▪ The stem is not bent/damaged.
	  ▪ Probe cables are not kinked/broken.
	  ▪ Simulating a failed leak test triggers an alarm.
	  ▪ High water levels are recognized by the tank monitoring console, and stick measurements match the float measurements (read through the console).
	• Any issues identified with the criteria above
	• Description of actions taken to rectify any issues identified

Consoles and probes/floats used for ATG are also subject to 30-day walkthrough inspections[109].

Issues

- **Proper Calibration of the Tank Monitoring Console**

  Performing ATG leak tests is possible only when the console is calibrated properly. Inspectors are advised to check that the information regarding the tank as stored in the console, matches the information in the installation records – discrepancies with the tank dimensions (or even tank tilt) is a strong indicator that the results of the leak tests are not accurate.

- **Ports for Tank Level Sensors**

  ATG tank level sensors may be located either in the tank-top sump or directly above the center of the tank. In the latter case, the sensor should have a dedicated access port labeled with 'No Fill' to indicate that it is not the fill pipe.

Questions

ATG	***Automatic Tank Gauging***
ATG_val	***Is this LD method valid for the tank system?***
Y	» No issues were found under this question.
NV	» *613-2.3(b)(1):* Automatic tank gauging is not a valid leak detection method for the tank (and there are no other valid leak detection methods in use). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid leak detection method.
ST ***[SP2/SP3/SP5]***	» *613-2.3(c)(4)(i):* The automatic tank gauging system cannot be shown to meet standards. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a tank tightness test within 30 calendar days after the date of the NOV.
SM	» Automatic tank gauging either is not required for the tank or supplements a different LD method that is being used to meet leak detection requirements.
ATG_ld	***Is the LD method being performed periodically?***
Y	» No issues were found under this question.
NL ***[SP2/SP3/SP5]***	» *613-2.3(b)(1)(i)(a) / 2.3(b)(1)(i)(b):* Automatic tank gauging is not being performed. » *Note(s):* Test records are the primary evidence that automatic tank gauging is being performed; if tank gauging is being performed, but either the tests are not being recorded or records are not being retained for at least three years, Response **NR** under Question **ATG_ldr** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the records/results of) four weekly leak tests, or install/utilize (and submit documentation of) a valid leak detection method.
PL ***[SP2/SP3/SP5]***	» *613-2.3(b)(1)(i)(a) / 2.3(b)(1)(i)(b):* Automatic tank gauging is not being performed at least weekly. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the records/results of) four weekly leak tests, or install/utilize (and submit documentation of) a valid leak detection method. » *Additional Action(s):* There is no need for the curative measure if the most recent weekly leak test was performed but a previous one was not; this violation, however, should still be cited.
ATG_ldr	***Are the LD records being retained?*** ***Note: records must be retained for 3 years.***
Y	» No issues were found under this question.
NR ***[SP2/SP3/SP5]***	» *613-2.3(g)(1):* Leak tests are not being recorded, or records are not being retained for at least three years. » *Note(s):* Test records are the primary evidence that automatic tank gauging is being performed; if the records are missing, tank gauging is likely not being performed (and Response **NL** under Question **ATG_ld** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records/results of the last four weekly leak tests, or perform (and submit the records/results of) four weekly leak tests.

ATG_gwo	***Is the equipment in good working order?***
Y	» No issues were found under this question.
IM ***[SP2/SP3/SP5]***	» *613-2.3(c)(4)(iii):* The automatic tank gauging system is not set up correctly to conduct leak tests (e.g., using an incorrect tank capacity or dimensions), or leak tests are not being performed for the appropriate duration. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must properly calibrate the automatic tank gauging system and perform (and submit the records/results of) three weekly leak tests with the corrected setup.
PLL ***[SP2/SP3/SP5]***	» *613-2.3(c)(4)(i):* Leak tests are being performed when the petroleum level in the tank is lower than what is routinely stored. » *Note(s):* Test records should be reviewed to determine petroleum levels when the tests were performed. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must program the automatic tank gauging system to perform leak tests when the tank is filled (to its normal levels), and perform (and submit the records/results of) leak tests at these levels. » *Additional Action(s):* Tests should be conducted as soon as possible after deliveries; if the tank receives infrequent deliveries, the inspector should review records for tests performed when the tank had its highest levels of petroleum.
O	» *613-1.12 / 2.3(c)(4)(iii):* The automatic tank gauging system is inoperable. » *Note(s):* The automatic tank gauging system is considered inoperable if any of the following is true: - the probe/float is malfunctioning; - the console is shown to be defective or unpowered; or - the console and the probe/float do not have a connection, per the latest results of either the monthly connectivity inspections (for SP2/SP3/SP5 UST systems) or the annual operability inspections (for SP2/SP5 UST systems). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must repair or replace the automatic tank gauging system, and submit documentation proving that the system has been repaired/replaced and that weekly leak tests are being conducted. » *Additional Action(s):* Automatic tank gauging is likely not being performed if the system is inoperable (see Question **ATG_Id**, Response **NL**).
NX	» *613-1.4(b):* The automatic tank gauging system could not be accessed for inspection (e.g., the console is in a locked room). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must submit documentation showing that the automatic tank gauging system is present and in good working order/properly configured. » *Additional Action(s):* The inspector should perform a follow-up inspection to confirm that the automatic tank gauging system is set up properly and that leak tests are being performed.

ATG_itm	***Is the equipment being inspected periodically?*** ***Note: connectivity inspections are required for all UST systems [SP2/SP3/SP5]. Operability inspections are required for federally regulated UST systems [SP2/SP5].***
Y	» No issues were found under this question.
NC ***[SP2/SP3/SP5]***	» *613-2.2(g)(1):* Connectivity inspections are not being performed for the automatic tank gauging system. » *Note(s):* Inspection records are the primary evidence that connectivity inspections are being performed; if inspections are being performed, but either the inspections are not being recorded or records are not being retained for at least three years, Response **NRC** under Question **ATG_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) a connectivity inspection.
PC ***[SP2/SP3/SP5]***	» *613-2.2(g)(1):* Connectivity inspections are not being performed for the automatic tank gauging system at least every 30 days. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) a connectivity inspection.
NO ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(a) – (b):* Operability inspections are not being performed for the automatic tank gauging system. » *Note(s):* Inspection records are the primary evidence that operability inspections are being performed; if inspections are being performed, but either the inspections are not being recorded or records are not being retained for at least three years, Response **NRO** under Question **ATG_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection.
PO ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(a) – (b):* Operability inspections are not being performed for the automatic tank gauging system at least annually. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection.
ATG_rec	***Are the equipment inspection records being retained?*** ***Note: records must be retained for 3 years.***
Y	» No issues were found under this question.
NRC ***[SP2/SP3/SP5]***	» *613-2.2(g)(1) / 2.2(g)(3):* Connectivity inspections are not being recorded, or records are not being retained for at least three years. » *Note(s):* Inspection records are the primary evidence that connectivity inspections are being performed; if the records are missing, inspections are likely not being performed (and Response **NC** under Question **ATG_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records of the last three connectivity inspections, or perform (and submit the records of) a connectivity inspection.
NRO ***[SP2/SP5]***	» *613-2.2(g)(2) / 2.2(g)(3):* Operability inspections are not being recorded, or records are not being retained for at least three years. » *Note(s):* Inspection records are the primary evidence that operability inspections are being performed; if the records are missing, inspections are likely not being performed (and Response **NO** under Question **ATG_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records of the last operability inspection, or perform (and submit the records of) an operability inspection.

ATG_com	Was the equipment (operability) inspection complete/adequate?
Y	» No issues were found under this question.
AL ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(a) – (b):* The console alarm was not verified to trigger (when a failed leak test is simulated) as part of the operability inspections. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection and include the alarm in the inspection.
CF ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(a):* The automatic tank gauging system configuration was not verified as part of the operability inspections. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection and include the leak rate/tank system configuration in the inspection.
BA ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(a):* The (console) battery backup was not verified to have power as part of the operability inspections. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection and include the battery backup in the inspection.
FL ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(b):* Floats were not inspected for free movement as part of the operability inspections. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection and include the float(s) in the inspection.
CN ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(b):* Probe/float readings (as read through the console) were not verified to match actual petroleum levels in the tank, as part of the operability inspections. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection and include the console communication in the inspection.

ATGF_val	***Is this LD method valid for the tank system?*** ***Note: automatic tank gauging (FCTs) is a valid LD method only for SP2 (or SP5), Cat. 1/2 field-constructed USTs with a design capacity greater than 50,000 gallons. (This method must be used in conjunction with biennial or triennial tightness testing (0.2 gph) of the FCT to be acceptable.)***
Y	» No issues were found under this question.
NV	» *613-2.3(b)(1):* FCT automatic tank gauging (with biennial or triennial FCT tightness testing) is not a valid leak detection method for the tank (and there are no other valid leak detection methods in use). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid leak detection method.
ST ***[SP2/SP5]***	» *613-2.3(e)(2)(i) / 2.3(e)(2)(ii):* The FCT automatic tank gauging system cannot be shown to meet standards. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a tank tightness test within 30 calendar days after the date of the NOV.
SM	» FCT automatic tank gauging either is not required for the tank or supplements a different LD method that is being used to meet leak detection requirements.
ATGF_ld	***Is the LD method being performed periodically?***
Y	» No issues were found under this question.
NL ***[SP2/SP5]***	» *613-2.3(b)(1)(i)(b) / 2.3(b)(1)(ii)(b) / 2.3(e)(2)(i) / 2.3(e)(2)(ii):* FCT automatic tank gauging (with biennial or triennial FCT tightness testing) is not being performed. » *Note(s):* Test records are the primary evidence that automatic tank gauging is being performed; if tank gauging is being performed, but either the tests are not being recorded or records are not being retained for at least three years, Response **NR** under Question **ATGF_ldr** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the records/results of) four weekly leak tests, or install/utilize (and submit documentation of) a valid leak detection method.
PL ***[SP2/SP5]***	» *613-2.3(b)(1)(i)(b) / 2.3(b)(1)(ii)(b) / 2.3(e)(2)(i) / 2.3(e)(2)(ii):* FCT automatic tank gauging (with biennial or triennial FCT tightness testing) is not being performed at least weekly. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the records/results of) four weekly leak tests, or install/utilize (and submit documentation of) a valid leak detection method. » *Additional Action(s):* There is no need for the curative measure if the most recent weekly leak test was performed but a previous one was not; this violation, however, should still be cited.
ATGF_ldr	***Are the LD records being retained?*** ***Note: records must be retained for 3 years.***
Y	» No issues were found under this question.
NR ***[SP2/SP5]***	» *613-2.3(g)(1):* Leak tests are not being recorded, or records are not being retained for at least three years. » *Note(s):* Test records are the primary evidence that automatic tank gauging is being performed; if the records are missing, tank gauging is likely not being performed (and Response **NL** under Question **ATGF_ld** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records/results of the last four weekly leak tests, or perform (and submit the records/results of) four weekly leak tests.

ATGF_gwo	*Is the equipment in good working order?*
Y	» No issues were found under this question.
IM ***[SP2/SP5]***	» *613-2.3(c)(4)(iii) / 2.3(e)(2)(i) / 2.3(e)(2)(ii):* The automatic tank gauging system is not set up correctly to conduct leak tests (e.g., using an incorrect tank capacity or dimensions), or leak tests are not being performed for the appropriate duration. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must properly calibrate the automatic tank gauging system and perform (and submit the records/results of) three weekly leak tests with the corrected setup.
PLL ***[SP2/SP5]***	» *613-2.3(c)(4)(i):* Leak tests are being performed when the petroleum level in the tank is lower than what is routinely stored. » *Note(s):* Test records should be reviewed to determine petroleum levels when the tests were performed. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must program the automatic tank gauging system to perform leak tests when the tank is filled (to its normal levels), and perform (and submit the records/results of) leak tests at these levels. » *Additional Action(s):* Tests should be conducted as soon as possible after deliveries; if the tank receives infrequent deliveries, the inspector should review records for tests performed when the tank had its highest levels of petroleum.
O	» *613-1.12 / 2.3(c)(4)(iii) / 2.3(e)(2)(i) / 2.3(e)(2)(ii):* The automatic tank gauging system is inoperable, but would otherwise meet standards. » *Note(s):* The automatic tank gauging system is considered inoperable if any of the following is true: - the probe/float is malfunctioning; - the console is shown to be defective or unpowered; or - the console and the probe/float do not have a connection, per the latest results of either the monthly connectivity inspections (for SP2/SP3/SP5 UST systems) or the annual operability inspections (for SP2/SP5 UST systems). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must repair or replace the automatic tank gauging system, and submit documentation proving that the system has been repaired/replaced and that weekly leak tests are being conducted. » *Additional Action(s):* Automatic tank gauging is likely not being performed if the system is inoperable (see Question **ATGF_Id**, Response **NL**).
NX	» *613-1.4(b):* The automatic tank gauging system could not be accessed for inspection (e.g., the console is in a locked room). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must submit documentation showing that the automatic tank gauging system is present and in good working order/properly configured. » *Additional Action(s):* The inspector should perform a follow-up inspection to confirm that the automatic tank gauging system is set up properly and that leak tests are being performed.

ATGF_itm	***Is the equipment being inspected periodically?*** ***Note: connectivity inspections are required for all UST systems [SP2/SP3/SP5]. Operability inspections are required for federally regulated UST systems [SP2/SP5].***
Y	» No issues were found under this question.
NC ***[SP2/SP5]***	» *613-2.2(g)(1):* Connectivity inspections are not being performed for the automatic tank gauging system. » *Note(s):* Inspection records are the primary evidence that connectivity inspections are being performed; if inspections are being performed, but either the inspections are not being recorded or records are not being retained for at least three years, Response **NRC** under Question **ATGF_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) a connectivity inspection.
PC ***[SP2/SP5]***	» *613-2.2(g)(1):* Connectivity inspections are not being performed for the automatic tank gauging system at least every 30 days. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) a connectivity inspection.
NO ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(a) – (b):* Operability inspections are not being performed for the automatic tank gauging system. » *Note(s):* Inspection records are the primary evidence that operability inspections are being performed; if inspections are being performed, but either the inspections are not being recorded or records are not being retained for at least three years, Response **NRO** under Question **ATGF_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection.
PO ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(a) – (b):* Operability inspections are not being performed for the automatic tank gauging system at least annually. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection.
ATGF_rec	***Are the equipment inspection records being retained?*** ***Note: records must be retained for 3 years.***
Y	» No issues were found under this question.
NRC ***[SP2/SP5]***	» *613-2.2(g)(1) / 2.2(g)(3):* Connectivity inspections are not being recorded, or records are not being retained for at least three years. » *Note(s):* Inspection records are the primary evidence that connectivity inspections are being performed; if the records are missing, inspections are likely not being performed (and Response **NC** under Question **ATGF_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records of the last three connectivity inspections, or perform (and submit the records of) a connectivity inspection.
NRO ***[SP2/SP5]***	» *613-2.2(g)(2) / 2.2(g)(3):* Operability inspections are not being recorded, or records are not being retained for at least three years. » *Note(s):* Inspection records are the primary evidence that operability inspections are being performed; if the records are missing, inspections are likely not being performed (and Response **NO** under Question **ATGF_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records of the last operability inspection, or perform (and submit the records of) an operability inspection.

ATGF_com	Was the equipment (operability) inspection complete/adequate?
Y	» No issues were found under this question.
AL ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(a) – (b):* The console alarm was not verified to trigger (when a failed leak test is simulated) as part of the operability inspections. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection and include the alarm in the inspection.
CF ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(a):* The automatic tank gauging system configuration was not verified as part of the operability inspections. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection and include the leak rate/tank system configuration in the inspection.
BA ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(a):* The (console) battery backup was not verified to have power as part of the operability inspections. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection and include the battery backup in the inspection.
FL ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(b):* Floats were not inspected for free movement as part of the operability inspections. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection and include the float(s) in the inspection.
CN ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(b):* Probe/float readings (as read through the console) were not verified to match actual petroleum levels in the tank, as part of the operability inspections. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection and include the console communication in the inspection.

Vapor/Groundwater Monitoring [VGM] and Vapor Monitoring w/ Tracer (for FCTs/FCT-associated piping) [VMTF]

Vapor monitoring (with a tracer compound) and groundwater monitoring are forms of leak detection where wells within the tank excavation are monitored to detect petroleum contamination – in the form of hydrocarbon vapors and free product – in case of equipment failure.

Vapor and groundwater monitoring are poor methods of leak detection. Leaks are not commonly detected in real time as either method is often performed weekly (though continuous electronic monitoring exists if rarely used). Both are also often used for old tank systems with no enclosed form of secondary containment (i.e., double-wall construction or impermeable liners in the excavation zone, possibly with cut-off walls), which means that leaks are not detected until they have become releases. Vapor and groundwater monitoring are still valid forms of leak detection for certain tanks and piping, but facilities are highly discouraged from using them.

The following illustrates the differences between vapor/groundwater monitoring performed for conventional tanks, and vapor monitoring (with a tracer compound) performed for field-constructed tanks with a design capacity greater than 50,000 gallons, and associated piping.

SP2 Leak Detection:	***Vapor/Groundwater Monitoring [VGM]***	***Vapor Monitoring w/ Tracer (for FCTs/FCT-associated piping) [VMTF]***

Differences between Excavation Area Monitoring Methods	• *Acceptable for:*
	  ○ Cat. 1 tanks
	  ○ Cat. 1/2 piping
	  ▪ Cat. 3 piping associated with FCTs > 50k gal.
	• *Perform and Record Results:* Weekly / Continuously
		• *Acceptable for:*
		  ○ Cat. 1/2 field-constructed tanks (FCTs) with a design capacity greater than 50,000 gallons
		  ○ Cat. 1/2/3 piping associated with FCTs > 50k gal.
		• *Perform and Record Results:* Annually
		  ○ *Leak Rate:* 0.1 gph

A site assessment must be performed prior to utilizing these leak detection methods, to establish the following (as applicable).

	Vapor Monitoring and Vapor Monitoring w/ Tracer (for FCTs/FCT-associated piping) [VMTF]	***Groundwater Monitoring***
SP2 LD Records: ***Required Site Assessment Information***	• Backfill materials to be used are sufficiently porous (such that vapors can readily reach the monitoring wells) • Petroleum (or a constituent/tracer compound) stored in the tank system is volatile enough to be detectable at the monitoring well • Groundwater/rainfall/soil moisture and other factors do not affect the vapor monitoring equipment such that a leak is undetected for more than seven days • Background contamination will not affect the monitoring for vapors • Number/positioning of wells necessary to detect leaks (from the tank system component being monitored) within the excavation zone	• Petroleum stored is immiscible in water, and has a specific gravity of less than 1 • Groundwater is never more than 20’ away from the ground surface • The slotted portion of the monitoring well must be designed to prevent migration of natural soils/filter pack into the well, and allow entry of petroleum on the water table into the well (under both high and low groundwater conditions) • Backfill materials to be used are sufficiently porous such that the hydraulic conductivity of the materials between the monitoring wells and the tank system component being monitored, is at least 0.01 cm/s • Monitoring wells are sealed from the ground surface to the top of the filter pack • Monitoring wells/equipment are either within the excavation zone or is as close to it as possible • Number/positioning of wells necessary to detect leaks (from the tank system component being monitored) within the excavation zone

A site assessment report containing all of the information above must be retained for as long as vapor or groundwater monitoring is in use[111]. Any site assessment performed after the effective date of the new 40 CFR Part 280 (October 13, 2015) must also be signed by either a professional engineer (PE), a professional geologist, or an equivalent licensed professional with experience in environmental engineering, hydrogeology, or other relevant technical discipline.

VGM/VMTF records must also be retained for at least three years and have the following information.

	Vapor Monitoring and Vapor Monitoring w/ Tracer (for FCTs/FCT-associated piping) [VMTF]	***Groundwater Monitoring***
SP2 LD Records: ***Required Information***	• Tank ID number • Leak rate (in gallons per hour) • Date/time of sampling • Type of petroleum (and constituent/tracer compound if necessary) stored in the tank system • Type of equipment used – must be designed/operated to detect any increases in vapor concentrations above the background levels, as attributed to petroleum type (or constituent/tracer compound) leaking from the tank system component being monitored • Monitoring well(s) sampled • Vapor/tracer concentration measured • Sampling results (i.e., was the measured concentration greater than the background levels indicated on the site assessment report)	• Tank ID number • Date/time of sampling • Type of petroleum stored in the tank system • Type of equipment used – must be able to detect at least 1/8” of petroleum on top of groundwater in the wells • Monitoring well(s) sampled • Sampling results (i.e., was at least 1/8” of petroleum found in the groundwater)

A leak is suspected when the sampling results indicate either:

- an increase in vapor concentration over background levels; or
- the presence of petroleum in the groundwater.

These sampling results must be reported to the Spill Hotline within two hours after discovery unless the monitoring equipment is found to be defective and is immediately repaired/replaced/recalibrated, AND additional monitoring does not confirm the initial results. However, there are situations where the presence of petroleum in a monitoring well is evidence of a release and must be reported to the Spill Hotline as such within two hours after discovery (and corrective action must begin in accordance with 6 NYCRR Subpart 613-7).

The connectivity and operability of (any) tank monitoring consoles, well sensors, and handheld (electronic) sampling equipment (e.g., portable photoionization detectors/probes), must also be inspected on a regular basis. Inspection records must be retained for (at least) three years and have the following information.

SP2 LD Inspections	***Vapor/Groundwater Monitoring Equipment***
(30-Day) Connectivity Inspection	• Tank ID number • Date/time of inspection • Verification (as necessary) that the tank monitoring console and the well sensors are communicating with each other • Any issues identified with the criterion above • Description of actions taken to rectify any issues identified

(Annual) Operability Inspection	• Tank ID number
	• Date/time of inspection
	• Verification of the following (as necessary):
	  ○ Tank Monitoring Console (or Another System Controller)
	  ▪ Console alarm is functional.
	  ▪ Console's backup battery has power.
	  ▪ Tank monitoring console is properly configured/calibrated.
	  ○ (Well) Sensors
	  ▪ There is no residual buildup on the sensor.
	  ▪ The float moves freely across the length of the probe stem.
	  ▪ The sensor is not damaged.
	  ▪ Sensor cables are not kinked/broken.
	  ▪ Simulating a leak triggers an alarm.
	  ▪ The sensor is properly positioned and correctly identified on the tank monitoring console, and well measurements match the sensor measurements (read through the console).
	  ○ Handheld (Electronic) Sampling Equipment
	  ▪ The sampling equipment is properly configured/calibrated and in good working order.
	• Any issues identified with the criteria above
	• Description of actions taken to rectify any issues identified

Tank monitoring consoles/(well) sensors and groundwater bailers used for VGM/VMTF are also subject to 30-day and annual walkthrough inspections[109], respectively.

Issues

- **Monitoring Wells Marked and Secured**

  Inspectors should verify that monitoring wells are both marked and sealed. Lids to monitoring wells must be labeled with a black triangle on a white background (or simply labeled as such). The lid should also be secured to avoid surface water intrusion and unauthorized access, particularly deliveries that could occur if the well were mistaken for a fill port.

- **Demonstration of Manual Vapor/Groundwater Monitoring**

  Inspectors should ask operators to demonstrate their monitoring method/routine (particularly ones using handheld sampling equipment) to verify that the wells are being sampled appropriately.

  Facilities also cannot claim to perform manual groundwater monitoring just by looking into a monitoring well, as it is difficult to differentiate between water and petroleum within. Groundwater samples must be pulled out of the well (using a bailer) before a determination can be made.

- **Position of Groundwater Monitoring Screen Relative to Water Table**

  The screen of a groundwater well must bridge the water table; if the screen is always above or below the water table, it will not collect petroleum (and will not indicate groundwater contamination).

Questions

VGM	***Vapor/Groundwater Monitoring***
VGM_val	***Is this LD method valid for the tank system?***
Y	» No issues were found under this question.
NVT	» *613-2.3(b)(1):* Vapor/groundwater monitoring is not a valid leak detection method for the tank (and there are no other valid leak detection methods in use). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid leak detection method.
SMT	» Vapor/groundwater monitoring either is not required for the tank or supplements a different LD method that is being used to meet leak detection requirements.
NVP	» *613-2.3(b)(2):* Vapor/groundwater monitoring is not a valid leak detection method for the piping (and there are no other valid leak detection methods in use). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid leak detection method.
SMP	» Vapor/groundwater monitoring either is not required for the piping or supplements a different LD method that is being used to meet leak detection requirements.
VGM_ld	***Is the LD method being performed periodically?***
Y	» No issues were found under this question.
NLT [SP2/SP3/SP5]	» *613-2.3(b)(1)(i)(a):* Vapor/groundwater monitoring is not being performed for the tank. » *Note(s):* Sampling records are the primary evidence that vapor/groundwater monitoring is being performed; if monitoring is being performed, but either sampling is not being recorded or records are not being retained for at least three years, Response **NR** under Question **VGM_ldr** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the records of) four weekly samplings, or install/utilize (and submit documentation of) a valid leak detection method.
PLT [SP2/SP3/SP5]	» *613-2.3(b)(1)(i)(a):* Vapor/groundwater monitoring is not being performed for the tank at least weekly. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the records of) four weekly samplings, or install/utilize (and submit documentation of) a valid leak detection method. » *Additional Action(s):* There is no need for the curative measure if the most recent weekly sampling was performed but a previous one was not; this violation, however, should still be cited.
NLP [SP2/SP3/SP5]	» *613-2.3(b)(2)(i)(a)(3) / 2.3(b)(2)(i)(b)(3) / 2.3(b)(2)(ii)(a) / 2.3(b)(2)(ii)(b) / 2.3(b)(2)(iii):* Vapor/groundwater monitoring is not being performed for the piping. » *Note(s):* Sampling records are the primary evidence that vapor/groundwater monitoring is being performed; if monitoring is being performed, but either sampling is not being recorded or records are not being retained for at least three years, Response **NR** under Question **VGM_ldr** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the records of) four weekly samplings, or install/utilize (and submit documentation of) a valid leak detection method.
PLP [SP2/SP3/SP5]	» *613-2.3(b)(2)(i)(a)(3) / 2.3(b)(2)(i)(b)(3) / 2.3(b)(2)(ii)(a) / 2.3(b)(2)(ii)(b) / 2.3(b)(2)(iii):* Vapor/groundwater monitoring is not being performed for the piping at least weekly. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the records of) four weekly samplings, or install/utilize (and submit documentation of) a valid leak detection method. » *Additional Action(s):* There is no need for the curative measure if the most recent weekly sampling was performed but a previous one was not; this violation, however, should still be cited.

VGM_ldr	***Are the LD records being retained?*** ***Note: records must be retained for 3 years.***
Y	» No issues were found under this question.
NR ***[SP2/SP3/SP5]***	» *613-2.3(g)(1):* Vapor/groundwater monitoring is not being recorded, or records are not being retained for at least three years. » *Note(s):* Sampling records are the primary evidence that vapor/groundwater monitoring is being performed; if the records are missing, monitoring is likely not being performed (and Response **NLT**/**NLP** under Question **VGM_ld** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records of the last four weekly samplings, or perform (and submit the records of) four weekly samplings.
VGM_gwo	***Is the equipment in good working order?*** ***Note: answering this question is not necessary if the site assessment report is missing - Question VGM_mis should be answered instead.***
Y	» No issues were found under this question.
WDT ***[SP2/SP3/SP5]***	» *613-2.3(c)(5)(vi) / 2.3(c)(6)(vii):* The site assessment report does not indicate that the wells either meet all design standards or will detect leaks from all portions of the tank system. » *Note(s):* Note that Responses **GWT** or **VWT** should be selected instead if either response better describes individual issues found with the wells. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a tank tightness test within 30 calendar days after the date of the NOV.
GWT ***[SP2/SP3/SP5]***	» *613-2.3(c)(6)(ii):* The site assessment report does not indicate that groundwater is either always detectable within the groundwater wells or never more than 20’ from the ground surface. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a tank tightness test within 30 calendar days after the date of the NOV.
VWT ***[SP2/SP3/SP5]***	» *613-2.3(c)(5)(iii):* The site assessment report does not indicate that the vapor monitoring wells are never affected by groundwater, rainfall, soil moisture, etc. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a tank tightness test within 30 calendar days after the date of the NOV.
WDP ***[SP2/SP3/SP5]***	» *613-2.3(c)(5)(vi) / 2.3(c)(6)(vii) / 2.3(d)(3):* The site assessment report does not indicate that the wells either meet all design standards or will detect leaks from all portions of the tank system. » *Note(s):* Note that Responses **GWP** or **VWP** should be selected instead if either response better describes individual issues found with the wells. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a line tightness test within 30 calendar days after the date of the NOV.
GWP ***[SP2/SP3/SP5]***	» *613-2.3(c)(6)(ii) / 2.3(d)(3):* The site assessment report does not indicate that groundwater is either always detectable within the groundwater wells or never more than 20’ from the ground surface. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a line tightness test within 30 calendar days after the date of the NOV.
VWP ***[SP2/SP3/SP5]***	» *613-2.3(c)(5)(iii) / 2.3(d)(3):* The site assessment report does not indicate that the vapor monitoring wells are never affected by groundwater, rainfall, soil moisture, etc. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a line tightness test within 30 calendar days after the date of the NOV.

VGM_itm	*Is the equipment being inspected periodically?* ***Note: connectivity inspections are required for all UST systems [SP2/SP3/SP5]. Operability inspections are required for federally regulated UST systems [SP2/SP5].***
Y	» No issues were found under this question.
NC ***[SP2/SP3/SP5]***	» *613-2.2(g)(1):* Connectivity inspections are not being performed for the vapor/groundwater monitoring system. » *Note(s):* Inspection records are the primary evidence that connectivity inspections are being performed; if inspections are being performed, but either the inspections are not being recorded or records are not being retained for at least three years, Response **NRC** under Question **VGM_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) a connectivity inspection.
PC ***[SP2/SP3/SP5]***	» *613-2.2(g)(1):* Connectivity inspections are not being performed for the vapor/groundwater monitoring system at least every 30 days. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) a connectivity inspection.
XPC ***[SP2/SP3/SP5]***	» Connectivity inspections are not required because vapor/groundwater monitoring is performed with non-electronic equipment.
NO ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(a) / 2.2(g)(2)(ii)(b) / 2.2(g)(2)(ii)(e):* Operability inspections are not being performed for the vapor/groundwater monitoring equipment. » *Note(s):* Inspection records are the primary evidence that operability inspections are being performed; if inspections are being performed, but either the inspections are not being recorded or records are not being retained for at least three years, Response **NRO** under Question **VGM_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection.
PO ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(a) / 2.2(g)(2)(ii)(b) / 2.2(g)(2)(ii)(e):* Operability inspections are not being performed for the vapor/groundwater monitoring equipment at least annually. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection.
VGM_rec	***Are the equipment inspection records being retained?*** ***Note: records must be retained for 3 years.***
Y	» No issues were found under this question.
NRC ***[SP2/SP3/SP5]***	» *613-2.2(g)(1) / 2.2(g)(3):* Connectivity inspections are not being recorded, or records are not being retained for at least three years. » *Note(s):* Inspection records are the primary evidence that connectivity inspections are being performed; if the records are missing, inspections are likely not being performed (and Response **NC** under Question **VGM_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records of the last three connectivity inspections, or perform (and submit the records of) a connectivity inspection.
NRO ***[SP2/SP5]***	» *613-2.2(g)(2) / 2.2(g)(3):* Operability inspections are not being recorded, or records are not being retained for at least three years. » *Note(s):* Inspection records are the primary evidence that operability inspections are being performed; if the records are missing, inspections are likely not being performed (and Response **NO** under Question **VGM_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records of the last operability inspection, or perform (and submit the records of) an operability inspection.

VGM_com	*Was the equipment (operability) inspection complete/adequate?*
Y	» No issues were found under this question.
AL ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(a) – (b):* The console alarm was not verified to trigger (when a failed leak test is simulated) as part of the operability inspections. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection and include the alarm in the inspection.
CF ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(a):* The automatic tank gauging system configuration was not verified as part of the operability inspections. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection and include the leak rate/tank system configuration in the inspection.
BA ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(a):* The (console) battery backup was not verified to have power as part of the operability inspections. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection and include the battery backup in the inspection.
FL ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(b):* Floats were not inspected for free movement as part of the operability inspections. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection and include the float(s) in the inspection.
CN ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(b):* Probe/float readings (as read through the console) were not verified to match actual petroleum levels in the tank, as part of the operability inspections. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection and include the console communication in the inspection.

VGM_mis	*Are there any other observed violations?*
SAT ***[SP2/SP3/SP5]***	» *613-2.3(c)(5)(vi) / 2.3(c)(6)(vii):* A site assessment was not performed for the (tank) excavation zone prior to the use of vapor/groundwater monitoring. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform a site assessment and submit a copy of the report. » *Additional Action(s):* If the assessment report indicates that the monitoring wells do not meet standards, another form of leak detection will need to be utilized.
PET ***[SP2/SP5]***	» *613-2.3(c)(5)(vi) / 2.3(c)(6)(vii):* The site assessment report was developed after October 13, 2015 but was not signed by a NYS-licensed/registered professional engineer/geologist. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either obtain a signoff from a NYS-licensed/registered professional engineer/geologist, or perform a site assessment and submit a copy of the report. » *Additional Action(s):* If the assessment report indicates that the monitoring wells do not meet standards, another form of leak detection will need to be utilized.
NRT ***[SP2/SP5]***	» *613-2.3(g)(4):* The site assessment report is not being retained for at least as long as vapor/groundwater monitoring is used as a (tank) leak detection method. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform a site assessment and submit a copy of the report. » *Additional Action(s):* If the assessment report indicates that the monitoring wells do not meet standards, another form of leak detection will need to be utilized.
SAP ***[SP2/SP3/SP5]***	» *613-2.3(c)(5)(vi) / 2.3(c)(6)(vii) / 2.3(d)(3):* A site assessment was not performed for the (piping) excavation zone prior to the use of vapor/groundwater monitoring. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform a site assessment and submit a copy of the report. » *Additional Action(s):* If the assessment report indicates that the monitoring wells do not meet standards, another form of leak detection will need to be utilized.
PEP ***[SP2/SP5]***	» *613-2.3(c)(5)(vi) / 2.3(c)(6)(vii):* The site assessment report was developed after October 13, 2015 but was not signed by a NYS-licensed/registered professional engineer/geologist. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either obtain a signoff from a NYS-licensed/registered professional engineer/geologist, or perform a site assessment and submit a copy of the report. » *Additional Action(s):* If the assessment report indicates that the monitoring wells do not meet standards, another form of leak detection will need to be utilized.
NRP ***[SP2/SP5]***	» *613-2.3(g)(4):* The site assessment report is not being retained for at least as long as vapor/groundwater monitoring is used as a (piping) leak detection method. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform a site assessment and submit a copy of the report. » *Additional Action(s):* If the assessment report indicates that the monitoring wells do not meet standards, another form of leak detection will need to be utilized.

VMTF	Vapor Monitoring w/ Tracer (FCTs)
VMTF_val	**Is this LD method valid for the tank system?** **Note: vapor monitoring w/ tracer (FCTs) is a valid (primary) LD method only for SP2 (or SP5): Cat. 1/2 field-constructed USTs with a design capacity greater than 50,000 gallons; and piping associated with field-constructed USTs with a design capacity greater than 50,000 gallons.**
Y	» No issues were found under this question.
NVT	» *613-2.3(b)(1):* FCT vapor monitoring (using a tracer compound) is not a valid leak detection method for the tank (and there are no other valid leak detection methods in use). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid leak detection method.
LRT [SP2/SP5]	» *613-2.3(e)(3):* The FCT vapor monitoring method cannot be shown to detect a leak at the rate of 0.1 gph. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a tank tightness test within 30 calendar days after the date of the NOV.
SMT	» FCT vapor monitoring (using a tracer compound) either is not required for the tank or supplements a different LD method that is being used to meet leak detection requirements.
NVP	» *613-2.3(b)(2):* FCT vapor monitoring (using a tracer compound) is not a valid leak detection method for the piping (and there are no other valid leak detection methods in use). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid leak detection method.
LRP [SP2/SP5]	» *613-2.3(f)(2):* The FCT vapor monitoring method cannot be shown to detect a leak at the rate of 0.1 gph. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a line tightness test within 30 calendar days after the date of the NOV.
SMP	» FCT vapor monitoring (using a tracer compound) either is not required for the piping or supplements a different LD method that is being used to meet leak detection requirements.

VMTF_Id	***Is the LD method being performed periodically?***
Y	» No issues were found under this question.
NLT ***[SP2/SP5]***	» *613-2.3(b)(1)(i)(b) / 2.3(b)(1)(ii)(b) / 2.3(e)(3):* FCT vapor monitoring (using a tracer compound) is not being performed for the tank. » *Note(s):* Sampling records are the primary evidence that FCT vapor monitoring is being performed; if monitoring is being performed, but either sampling is not being recorded or records are not being retained for at least three years, Response **NR** under Question **VMTF_Idr** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the records of) an annual sampling, or install/utilize (and submit documentation of) a valid leak detection method.
PLT ***[SP2/SP5]***	» *613-2.3(b)(1)(i)(b) / 2.3(b)(1)(ii)(b) / 2.3(e)(3):* FCT vapor monitoring (using a tracer compound) is not being performed for the tank at least annually. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the records of) an annual sampling, or install/utilize (and submit documentation of) a valid leak detection method.
NLP ***[SP2/SP5]***	» *613-2.3(b)(2)(iii) / 2.3(f)(2):* FCT vapor monitoring (using a tracer compound) is not being performed for the piping. » *Note(s):* Sampling records are the primary evidence that FCT vapor monitoring is being performed; if monitoring is being performed, but either sampling is not being recorded or records are not being retained for at least three years, Response **NR** under Question **VMTF_Idr** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the records of) an annual sampling, or install/utilize (and submit documentation of) a valid leak detection method.
PLP ***[SP2/SP5]***	» *613-2.3(b)(2)(iii) / 2.3(f)(2):* FCT vapor monitoring (using a tracer compound) is not being performed for the piping at least annually. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the records of) an annual sampling or install/utilize (and submit documentation of) a valid leak detection method.
VMTF_Idr	***Are the LD records being retained?*** ***Note: records must be retained for 3 years.***
Y	» No issues were found under this question.
NR ***[SP2/SP5]***	» *613-2.3(g)(1):* FCT vapor monitoring (using a tracer compound) is not being recorded, or records are not being retained for at least three years. » *Note(s):* Sampling records are the primary evidence that FCT vapor monitoring is being performed; if the records are missing, monitoring is likely not being performed (and Response **NLT**/**NLP** under Question **VMTF_Id** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records of the last four weekly samplings, or perform (and submit the records of) four weekly samplings.

VMTF_gwo	*Is the equipment in good working order?*
Y	» No issues were found under this question.
WDT ***[SP2/SP5]***	» *613-2.3(c)(5)(vi) / 2.3(e)(3):* The site assessment report does not indicate that the wells either meet all design standards or will detect leaks from all portions of the tank system. » *Note(s):* Note that Response **VWT** should be selected instead if it better describes individual issues found with the wells. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a tank tightness test within 30 calendar days after the date of the NOV.
VWT ***[SP2/SP5]***	» *613-2.3(c)(5)(iii) / 2.3(e)(3):* The site assessment report does not indicate that the vapor monitoring wells are never affected by groundwater, rainfall, soil moisture, etc. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a tank tightness test within 30 calendar days after the date of the NOV.
WDP ***[SP2/SP5]***	» *613-2.3(c)(5)(vi) / 2.3(f)(2):* The site assessment report does not indicate that the wells either meet all design standards or will detect leaks from all portions of the tank system. » *Note(s):* Note that Response **VWP** should be selected instead if it better describes individual issues found with the wells. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a line tightness test within 30 calendar days after the date of the NOV.
VWP ***[SP2/SP5]***	» *613-2.3(c)(5)(iii) / 2.3(f)(2):* The site assessment report does not indicate that the vapor monitoring wells are never affected by groundwater, rainfall, soil moisture, etc. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a line tightness test within 30 calendar days after the date of the NOV.

VMTF_itm	***Is the equipment being inspected periodically?*** ***Note: connectivity inspections are required for all UST systems [SP2/SP3/SP5]. Operability inspections are required for federally regulated UST systems [SP2/SP5].***
Y	» No issues were found under this question.
NC ***[SP2/SP5]***	» *613-2.2(g)(1):* Connectivity inspections are not being performed for the vapor monitoring system. » *Note(s):* Inspection records are the primary evidence that connectivity inspections are being performed; if inspections are being performed, but either the inspections are not being recorded or records are not being retained for at least three years, Response **NRC** under Question **VMTF_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) a connectivity inspection.
PC ***[SP2/SP5]***	» *613-2.2(g)(1):* Connectivity inspections are not being performed for the vapor monitoring system at least every 30 days. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) a connectivity inspection.
XPC ***[SP2/SP5]***	» Connectivity inspections are not required because vapor monitoring (using a tracer compound) is performed with non-electronic equipment.
NO ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(a) / 2.2(g)(2)(ii)(b) / 2.2(g)(2)(ii)(e):* Operability inspections are not being performed for the vapor monitoring equipment. » *Note(s):* Inspection records are the primary evidence that operability inspections are being performed; if inspections are being performed, but either the inspections are not being recorded or records are not being retained for at least three years, Response **NRO** under Question **VMTF_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection.
PO ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(a) / 2.2(g)(2)(ii)(b) / 2.2(g)(2)(ii)(e):* Operability inspections are not being performed for the vapor monitoring equipment at least annually. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection.
VMTF_rec	***Are the equipment inspection records being retained?*** ***Note: records must be retained for 3 years.***
Y	» No issues were found under this question.
NRC ***[SP2/SP5]***	» *613-2.2(g)(1) / 2.2(g)(3):* Connectivity inspections are not being recorded, or records are not being retained for at least three years. » *Note(s):* Inspection records are the primary evidence that connectivity inspections are being performed; if the records are missing, inspections are likely not being performed (and Response **NC** under Question **VMTF_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records of the last three connectivity inspections, or perform (and submit the records of) a connectivity inspection.
NRO ***[SP2/SP5]***	» *613-2.2(g)(2) / 2.2(g)(3):* Operability inspections are not being recorded, or records are not being retained for at least three years. » *Note(s):* Inspection records are the primary evidence that operability inspections are being performed; if the records are missing, inspections are likely not being performed (and Response **NO** under Question **VMTF_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records of the last operability inspection, or perform (and submit the records of) an operability inspection.

VMTF_com	*Was the equipment (operability) inspection complete/adequate?*
Y	» No issues were found under this question.
AL ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(a) – (b):* The console alarm was not verified to trigger (when a failed leak test is simulated) as part of the operability inspections. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection and include the alarm in the inspection.
CF ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(a):* The automatic tank gauging system configuration was not verified as part of the operability inspections. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection and include the leak rate/tank system configuration in the inspection.
BA ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(a):* The (console) battery backup was not verified to have power as part of the operability inspections. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection and include the battery backup in the inspection.
FL ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(b):* Floats were not inspected for free movement as part of the operability inspections. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection and include the float(s) in the inspection.
CN ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(b):* Probe/float readings (as read through the console) were not verified to match actual petroleum levels in the tank, as part of the operability inspections. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection and include the console communication in the inspection.

VMTF_mis	*Are there any other observed violations?*
SAT ***[SP2/SP5]***	» *613-2.3(c)(5)(vi) / 2.3(c)(6)(vii) / 2.3(e)(3):* A site assessment was not performed for the (tank) excavation zone prior to the use of vapor monitoring (using a tracer compound). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform a site assessment and submit a copy of the report. » *Additional Action(s):* If the assessment report indicates that the monitoring wells do not meet standards, another form of leak detection will need to be utilized.
PET ***[SP2/SP5]***	» *613-2.3(c)(5)(vi) / 2.3(c)(6)(vii) / 2.3(e)(3):* The site assessment report was developed after October 13, 2015 but was not signed by a NYS-licensed/registered professional engineer/geologist. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either obtain a signoff from a NYS-licensed/registered professional engineer/geologist, or perform a site assessment and submit a copy of the report. » *Additional Action(s):* If the assessment report indicates that the monitoring wells do not meet standards, another form of leak detection will need to be utilized.
NRT ***[SP2/SP5]***	» *613-2.3(e)(3) / 2.3(g)(4):* The site assessment report is not being retained for at least as long as vapor monitoring (using a tracer compound) is used as a (tank) leak detection method. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform a site assessment and submit a copy of the report. » *Additional Action(s):* If the assessment report indicates that the monitoring wells do not meet standards, another form of leak detection will need to be utilized.
SAP ***[SP2/SP5]***	» *613-2.3(c)(5)(vi) / 2.3(c)(6)(vii) / 2.3(f)(2):* A site assessment was not performed for the (piping) excavation zone prior to the use of vapor monitoring (using a tracer compound). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform a site assessment and submit a copy of the report. » *Additional Action(s):* If the assessment report indicates that the monitoring wells do not meet standards, another form of leak detection will need to be utilized.
PEP ***[SP2/SP5]***	» *613-2.3(c)(5)(vi) / 2.3(c)(6)(vii) / 2.3(f)(2):* The site assessment report was developed after October 13, 2015 but was not signed by a NYS-licensed/registered professional engineer/geologist. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either obtain a signoff from a NYS-licensed/registered professional engineer/geologist, or perform a site assessment and submit a copy of the report. » *Additional Action(s):* If the assessment report indicates that the monitoring wells do not meet standards, another form of leak detection will need to be utilized.
NRP ***[SP2/SP5]***	» *613-2.3(f)(2) / 2.3(g)(4):* The site assessment report is not being retained for at least as long as vapor monitoring (using a tracer compound) is used as a (piping) leak detection method. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform a site assessment and submit a copy of the report. » *Additional Action(s):* If the assessment report indicates that the monitoring wells do not meet standards, another form of leak detection will need to be utilized.

Interstitial Monitoring [INS]

Interstitial monitoring is a form of leak detection that monitors the space (i.e., interstice) between two impermeable layers. This commonly[128] refers to leak monitoring for double-walled tank system components (i.e., tank, piping), where leaks from the primary containment are captured in the interstice between the primary and secondary walls of the equipment. The interstice is monitored either:

- manually, using either water-finding paste and a gauging stick, or a level/pressure gauge, on a weekly basis; or
- electronically, with sensors connected to a tank console, providing continuous monitoring.

This leak detection method became the industry standard with the rise of double-walled equipment, which is much easier to install and monitor for leaks than equipment that is not inherently secondarily contained. Interstitial monitoring is also one of the few methods that detects leaks from the primary containment (i.e., tank/piping) before they become releases from the tank systems.

INS records must be retained for (at least) three years and have the following information.

Interstice Type	***SP2 LD Records: Required Information (for Interstitial Monitoring)***
Double-Walled Tanks	
Vacuum/ Pressurized Interstice	• Tank ID number • Date/time of monitoring • Monitoring results (i.e., did vacuum/pressure level change) • Net change in vacuum/pressure level (if any)
Dry Interstice[129] *(Filled with air)*	• Tank ID number • Date/time of monitoring • Monitoring results (i.e., were liquids found) • Inches of fluid (if any) • Notes on spill content (i.e., was it all petroleum or all water, how much of each was found, etc.)
Wet Interstice *(Filled with a brine solution)*	• Tank ID number • Date/time of monitoring • Monitoring results (i.e., was there a change in brine level and is it within the allowable range, was petroleum found) • Net change in brine level (in inches, if any)
Double-Walled Piping	
Piping Interstice + Containment Sump[130]	• Tank ID number • Date/time of monitoring • Monitoring results (i.e., were liquids found) • Inches of fluid (if any) • Notes on spill content (i.e., was it all petroleum or all water, how much of each was found, etc.)

A leak is suspected when the interstitial monitoring results indicate:

- a decrease in vacuum levels (for vacuum interstices);
- a change in brine levels (for wet interstices); or
- the presence of petroleum/water in the dry interstice or the piping interstice/containment sump.

Either of the first two scenarios must be reported to the Spill Hotline within two hours after discovery, unless the monitoring equipment is found to be defective and is immediately repaired/replaced/recalibrated, and additional monitoring does not confirm the initial results. The third scenario must be reported to the Spill Hotline within two hours after discovery, unless:

- the primary containment (i.e., tank or piping) is found to be defective but not leaking, and is immediately repaired/replaced following interstitial monitoring; and

[128] Monitoring wells placed within an excavation zone with an impermeable liner also count as interstitial monitoring (for single-walled tanks), but such setups are rare.
[129] Manual monitoring of dry interstices can only be performed for tanks that have specific testing ports for interstitial monitoring, either at the end of a steel tank or in the middle of a fiberglass-reinforced plastic tank.
[130] Containment sumps that are used for piping interstitial monitoring are subject to periodic integrity monitoring/testing. See **Containment Sumps** on p. 149.

- one of the following is true:
    - the monitoring equipment is found to be defective and is immediately repaired/replaced/recalibrated, and additional monitoring does not confirm the initial results; or
    - the results were investigated and determined to be a non-spill event (e.g., caused by filling the tank during testing).

The connectivity and operability of (any) tank monitoring consoles, interstitial/sump sensors, and vacuum pumps/pressure gauges must also be inspected on a regular basis. Inspection records must be retained for (at least) three years and have the following information.

SP2 LD Inspections	***Interstitial Monitoring Equipment***
(30-Day) Connectivity Inspection	• Tank ID number • Date/time of inspection • Verification (as necessary) that the tank monitoring console and the interstitial/sump sensors are communicating with each other • Any issues identified with the criterion above • Description of actions taken to rectify any issues identified
(Annual) Operability Inspection	• Tank ID number • Date/time of inspection • Verification of the following (as necessary): o Tank Monitoring Console (or Another System Controller) ▪ Console alarm is functional. ▪ Console's backup battery has power. ▪ Tank monitoring console is properly configured/calibrated. o Interstitial/Sump Sensors ▪ There is no residual buildup on the sensor. ▪ The float moves freely across the length of the probe stem. ▪ The sensor is not damaged. ▪ Sensor cables are not kinked/broken. ▪ Simulating a leak triggers an alarm. ▪ The sensor is properly positioned and correctly identified on the tank monitoring console, and stick measurements match the sensor measurements (read through the console). o Vacuum Pumps/Pressure Gauges ▪ The vacuum pump/pressure gauge is properly configured/calibrated and communicates with sensors/the console. • Any issues identified with the criteria above • Description of actions taken to rectify any issues identified

Tank monitoring consoles/sensors/vacuum pumps/pressure gauges and gauging sticks used for INS are also subject to 30-day and annual walkthrough inspections[109], respectively.

Issues

- **Sump Integrity Monitoring/Testing Requirements**

  Facilities may forego the integrity monitoring/testing requirements for containment sumps used for Cat. 1/2 piping interstitial monitoring, by performing an additional LD method (e.g., annual line tightness testing). However, this supplementary method must be noted on the PBS registration (along with interstitial monitoring).

- **Demonstration of Manual Interstitial Monitoring**

  Inspectors should ask operators to demonstrate their manual interstitial monitoring method/routine (particularly for tank interstices) to verify that the double-walled component is being monitored for leaks appropriately.

- **Liquid(s) Observed through Interstitial Monitoring**

  The presence of petroleum in the secondary containment (e.g., containment sump) often – though not always – indicates an integrity issue with the primary/inner wall of the double-walled component. Likewise, the presence of water may indicate an issue with the secondary/outer wall.

Questions

INS_val	***Is this LD method valid for the tank system?***
Y	» No issues were found under this question.
NVT	» *613-2.3(b)(1):* Interstitial monitoring is not a valid leak detection method for the tank (and there are no other valid leak detection methods in use). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid leak detection method.
SMT	» Interstitial monitoring either is not required for the tank or supplements a different LD method that is being used to meet leak detection requirements.
NVP	» *613-2.3(b)(2):* Interstitial monitoring is not a valid leak detection method for the piping (and there are no other valid leak detection methods in use). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid leak detection method.
SMP	» Interstitial monitoring either is not required for the piping or supplements a different LD method that is being used to meet leak detection requirements.
INS_ld	***Is the LD method being performed periodically?***
Y	» No issues were found under this question.
NLT [SP2/SP3/SP5]	» *613-2.3(b)(1)(i)(a) / 2.3(b)(1)(i)(b) / 2.3(b)(1)(ii)(a) / 2.3(b)(1)(ii)(b) / 2.3(b)(1)(iii):* Interstitial monitoring is not being performed for the tank. » *Note(s):* Monitoring records are the primary evidence that interstitial monitoring is being performed; if monitoring is being performed, but either the monitoring is not being recorded or records are not being retained for at least three years, Response **NR** under Question **INS_ldr** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) interstitial monitoring for four weeks.
PLT [SP2/SP3/SP5]	» *613-2.3(b)(1)(i)(a) / 2.3(b)(1)(i)(b) / 2.3(b)(1)(ii)(a) / 2.3(b)(1)(ii)(b) / 2.3(b)(1)(iii):* Interstitial monitoring is not being performed for the tank at least weekly. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) interstitial monitoring for four weeks. » *Additional Action(s):* There is no need for the curative measure if the most recent weekly monitoring was performed but a previous one was not; this violation, however, should still be cited.
NLP [SP2/SP3/SP5]	» *613-2.3(b)(2)(i)(a)(3) / 2.3(b)(2)(i)(b)(3) / 2.3(b)(2)(i)(c) / 2.3(b)(2)(ii)(a) / 2.3(b)(2)(ii)(b) / 2.3(b)(2)(ii)(c) / 2.3(b)(2)(iii):* Interstitial monitoring is not being performed for the piping. » *Note(s):* Monitoring records are the primary evidence that interstitial monitoring is being performed; if monitoring is being performed, but either the monitoring is not being recorded or records are not being retained for at least three years, Response **NR** under Question **INS_ldr** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) interstitial monitoring for four weeks.
PLP [SP2/SP3/SP5]	» *613-2.3(b)(2)(i)(a)(3) / 2.3(b)(2)(i)(b)(3) / 2.3(b)(2)(i)(c) / 2.3(b)(2)(ii)(a) / 2.3(b)(2)(ii)(b) / 2.3(b)(2)(ii)(c) / 2.3(b)(2)(iii):* Interstitial monitoring is not being performed for the piping at least weekly. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) interstitial monitoring for four weeks. » *Additional Action(s):* There is no need for the curative measure if the most recent weekly monitoring was performed but a previous one was not; this violation, however, should still be cited.

INS_ldr	***Are the LD records being retained?*** ***Note: records must be retained for 3 years.***
Y	» No issues were found under this question.
NR [SP2/SP3/SP5]	» *613-2.3(g)(1):* Interstitial monitoring is not being recorded, or records are not being retained for at least three years. » *Note(s):* Monitoring records are the primary evidence that interstitial monitoring is being performed; if the records are missing, interstitial monitoring is likely not being performed (and Response **NLT**/**NLP** under Question **INS_ld** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the monitoring records for the last four weeks, or perform (and submit the records of) interstitial monitoring for four weeks.
INS_gwo	***Is the equipment in good working order?***
Y	» No issues were found under this question.
NXT	» *613-1.4(b):* The (tank) interstitial monitoring equipment could not be accessed for inspection. » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must submit documentation showing that the monitoring equipment is present and in good working order. » *Additional Action(s):* The inspector should conduct a follow-up inspection (where possible) to observe the electronic equipment rather than rely on installation documentation or photographs from the facility.
SO	» *613-1.12 / 2.3(a)(1)(i) – (ii):* The monitoring equipment is inoperable. » *Note(s):* The monitoring equipment is considered inoperable if any of the following is true: - the sensor is malfunctioning; - the tank monitoring console is shown to be defective or unpowered; or - the console and the sensor do not have a connection, per the latest results of either the monthly connectivity inspections (for SP2/SP3/SP5 UST systems) or the annual operability inspections (for SP2/SP5 UST systems). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a work plan for the facility to repair or replace the inoperable equipment within 60 days after the date of the NOV.
8M	» *613-1.12:* The interstitial monitoring equipment is not accurate to 1/8”. » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must submit documentation showing that equipment capable of accurate measurement is in use.
SSP [SP2/SP3/SP5]	» *613-2.3(a)(1)(i) – (ii):* The sump sensor is positioned such that it would not detect a leak if one were to occur. » *Note(s):* Common scenarios include sensors located away from/above the lowest point of the sump (where contained liquids would pool), and sensors not placed vertically (e.g., horizontally, upside-down). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must fix the positioning of the sump sensor and submit a photograph showing the properly repositioned sensor.
NXP	» *613-1.4(b):* The (piping) interstitial monitoring equipment could not be accessed for inspection. » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must submit documentation showing that the monitoring equipment is present and in good working order. » *Additional Action(s):* The inspector should conduct a follow-up inspection (where possible) to observe the electronic equipment rather than rely on installation documentation or photographs from the facility.

INS_itm	*Is the equipment being inspected periodically?* ***Note: connectivity inspections are required for all UST systems [SP2/SP3/SP5]. Operability inspections are required for federally regulated UST systems [SP2/SP5].***
Y	» No issues were found under this question.
NC ***[SP2/SP3/SP5]***	» *613-2.2(g)(1):* Connectivity inspections are not being performed for the interstitial monitoring system. » *Note(s):* Inspection records are the primary evidence that connectivity inspections are being performed; if inspections are being performed, but either the inspections are not being recorded or records are not being retained for at least three years, Response **NRC** under Question **INS_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) a connectivity inspection.
PC ***[SP2/SP3/SP5]***	» *613-2.2(g)(1):* Connectivity inspections are not being performed for the interstitial monitoring system at least every 30 days. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) a connectivity inspection.
XPC ***[SP2/SP3/SP5]***	» Connectivity inspections are not required because interstitial monitoring is performed with non-electronic equipment.
NO ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(a) / 2.2(g)(2)(ii)(b) / 2.2(g)(2)(ii)(d):* Operability inspections are not being performed for the interstitial monitoring equipment. » *Note(s):* Inspection records are the primary evidence that operability inspections are being performed; if inspections are being performed, but either the inspections are not being recorded or records are not being retained for at least three years, Response **NRO** under Question **INS_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection.
PO ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(a) / 2.2(g)(2)(ii)(b) / 2.2(g)(2)(ii)(d):* Operability inspections are not being performed for the interstitial monitoring equipment at least annually. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection.
INS_rec	***Are the equipment inspection records being retained?*** ***Note: records must be retained for 3 years.***
Y	» No issues were found under this question.
NRC ***[SP2/SP3/SP5]***	» *613-2.2(g)(1) / 2.2(g)(3):* Connectivity inspections are not being recorded, or records are not being retained for at least three years. » *Note(s):* Inspection records are the primary evidence that connectivity inspections are being performed; if the records are missing, inspections are likely not being performed (and Response **NC** under Question **INS_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records of the last three connectivity inspections, or perform (and submit the records of) a connectivity inspection.
NRO ***[SP2/SP5]***	» *613-2.2(g)(2) / 2.2(g)(3):* Operability inspections are not being recorded, or records are not being retained for at least three years. » *Note(s):* Inspection records are the primary evidence that operability inspections are being performed; if the records are missing, inspections are likely not being performed (and Response **NO** under Question **INS_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records of the last operability inspection, or perform (and submit the records of) an operability inspection.

INS_com	*Was the equipment (operability) inspection complete/adequate?*
Y	» No issues were found under this question.
AL ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(a) – (b):* The console alarm was not verified to trigger (when a failed leak test is simulated) as part of the operability inspections. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection and include the alarm in the inspection.
BU ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(b):* The sensor(s) was not inspected for residual buildup as part of the operability inspections. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection and include sensor residual buildup in the inspection.
KB ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(b):* Visible sensor cables were not inspected for kinks/breaks as part of the operability inspections. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection and include sensor cables in the inspection.
FL ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(b):* Floats were not inspected for free movement as part of the operability inspections. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection and include the float(s) in the inspection.
CN ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(b):* Sensors were not inspected for proper communication with/identification on the console, as part of the operability inspections. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection and include the console communication in the inspection.

Statistical Inventory Reconciliation [SIR]

Statistical inventory reconciliation (SIR) is a mathematical leak detection method that uses a statistical model to determine whether a tank is leaking, based on inventory data regarding petroleum (and water) within the tank. These data are collected weekly for the last calendar 30 days (more/less, depending on the SIR test method) and sent to a third-party vendor. The vendor uses proprietary software to perform the calculations and return both qualitative and quantitative results as to whether the tank system is leaking.

SIR is very similar to inventory monitoring in that the same daily measurements are being processed to determine the presence (or absence) of a leak; however, SIR is more sensitive and accurate than inventory monitoring and provides better insight as to how much petroleum the tank system is losing. SIR does have its limitations – it does not detect leaks until the SIR analysis is performed (i.e., weekly); and after the leak has become a release.

Acceptable SIR test methods must:

- report a quantitative result with a calculated leak rate;
- be capable of detecting a leak rate of 0.2 gallons per hour (i.e., the minimum detectable leak rate or MDL rate); and
- use a threshold that exceeds one-half the MDL rate.

The National Work Group on Leak Detection Evaluations (NWGLDE) website[127] has a list of quantitative SIR test methods that meet the requirements above.

SIR records must be retained for (at least) three years and have the following information.

	Statistical Inventory Reconciliation [SIR]

SP2 LD Records:
 	
Required Information
	• Tank information
	  ○ Tank ID number
	  ○ Design capacity[131]
	  ○ Diameter/length
	  ○ Type of petroleum stored
	• Tank system component being monitored using SIR
	• Daily measurements taken at roughly the same time each operating day[132]:
	  ○ Petroleum delivered to the tank (gross volume in gallons)
	  ○ Petroleum dispensed from the tank (in gallons)
	  ○ Petroleum level in the tank (measured to the nearest 1/8”, then converted to gallons using a tank chart)
	  ○ Water level in the tank (measured to the nearest 1/8”, then converted to gallons using a tank chart)
	• Date/time of the measurements
	• SIR test method performed (listed as the equipment name on NWGLDE’s list)
	• Minimum detectable leak (MDL) rate (in gallons per hour)
	• Threshold (in gallons per hour)
	• Calculated leak rate (in gallons per hour)
	• A qualitative result (i.e., pass/fail/inconclusive) based on the comparison between the calculated leak rate and both the MDL rate and the threshold

A leak is suspected when either:

- the tank is shown to have suddenly lost petroleum; or
- the calculated leak rate exceeds the threshold, noted as either failed or inconclusive SIR results.

The first scenario must be reported to the Spill Hotline within two hours after discovery, unless the (primary) tank is found to be defective but not leaking and is immediately repaired or replaced following discovery. The second scenario must be reported to the Spill Hotline within 48 hours after discovery, unless the results are explained by inaccurate recordkeeping, temperature variations, or other factors not related to leaks – in these cases, the facility must keep records that explain the false-positive results, for at least three years.

Gauging sticks used for SIR are also subject to annual walkthrough inspections[109].

[131] SIR test methods often have restrictions on design capacity for a single tank, and some also have restrictions for manifolded tanks.
[132] The amount of data required (i.e., how many days’ worth) varies between SIR test methods.

Issues

- **Operating Days vs. Off Days**

  Daily measurements for statistical inventory reconciliation must be taken on "operating days," or days when the tank received and/or dispensed petroleum. Facilities should ensure that the tank did not lose petroleum on their off days by comparing the stick readings at the end of the last operating day and at the beginning of the first operating day afterwards, but off days should be crossed out on the inventory spreadsheet (and not filled out with zeroes that could be mistaken for measurements). The reconciliation should be performed for that 30-day period per the norm but with the smaller number of data/measurements.

- **Using Tank Monitoring Consoles and Probes/Floats to Perform Statistical Inventory Reconciliation**

  Electronic tank monitoring systems may be used to take daily measurements necessary for statistical inventory reconciliation, but these must be properly configured/calibrated, be compatible with the stored petroleum, and have the necessary probes/floats to be considered compliant. Such systems are subject to 30-day walkthrough inspections[109], as well as (30-day) connectivity inspections and (annual) operability inspections[126].

- **Combining Data for Tanks Producing Mid-Grade Blends**

  Facilities may store both premium and regular gasoline in multiple tanks for blending (often at the dispenser); collecting inventory data for SIR on such tanks – as one tank – cannot be done as SIR would not be able to tell which tank is leaking. Facilities must determine the dispensed volumes for each tank separately.

Questions

SIR_val	***Is this LD method valid for the tank system?*** ***Note: SIR is not valid for tank systems with unmetered dispensers.***
Y	» No issues were found under this question.
NVT	» *613-2.3(b)(1):* Statistical inventory reconciliation is not a valid leak detection method for the tank (and there are no other valid leak detection methods in use). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid leak detection method.
NWT [SP2/SP5]	» *613-2.3(c)(8):* The statistical inventory reconciliation test method cannot be shown to meet standards. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a tank tightness test within 30 calendar days after the date of the NOV.
SMT	» Statistical inventory reconciliation either is not required for the tank or supplements a different LD method that is being used to meet leak detection requirements.
NVP	» *613-2.3(b)(2):* Statistical inventory reconciliation is not a valid leak detection method for the piping (and there are no other valid leak detection methods in use). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid leak detection method.
NWP [SP2/SP5]	» *613-2.3(c)(8):* The statistical inventory reconciliation test method cannot be shown to meet standards. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a line tightness test within 30 calendar days after the date of the NOV.
SMP	» Statistical inventory reconciliation either is not required for the piping or supplements a different LD method that is being used to meet leak detection requirements.

SIR_ld	Is the LD method being performed periodically?
Y	» No issues were found under this question.
NLT **[SP2/SP5]**	» *613-2.3(b)(1)(i)(a):* Statistical inventory reconciliation measurements are not being reconciled for the tank. » *Note(s):* Reconciliation records are the primary evidence that statistical inventory reconciliation is being performed; if reconciliation is being performed, but either SIR is not being recorded or records are not being retained for at least three years, Response **NR** under Question **SIR_ldr** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the records/results of) four weekly SIR tests, or install/utilize (and submit documentation of) a valid leak detection method.
PLT **[SP2/SP5]**	» *613-2.3(b)(1)(i)(a):* Statistical inventory reconciliation measurements are not being reconciled for the tank at least weekly. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the records/results of) four weekly SIR tests, or install/utilize (and submit documentation of) a valid leak detection method. » *Additional Action(s):* There is no need for the curative measure if the most recent weekly SIR test was performed but a previous one was not; this violation, however, should still be cited.
NLP **[SP2/SP5]**	» *613-2.3(b)(2)(i)(a)(3) / 2.3(b)(2)(i)(b)(3) / 2.3(b)(2)(ii)(a) / 2.3(b)(2)(ii)(b) / 2.3(b)(2)(iii):* Statistical inventory reconciliation measurements are not being reconciled for the piping. » *Note(s):* Reconciliation records are the primary evidence that statistical inventory reconciliation is being performed; if reconciliation is being performed, but either SIR is not being recorded or records are not being retained for at least three years, Response **NR** under Question **SIR_ldr** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the records/results of) four weekly SIR tests, or install/utilize (and submit documentation of) a valid leak detection method.
PLP **[SP2/SP5]**	» *613-2.3(b)(2)(i)(a)(3) / 2.3(b)(2)(i)(b)(3) / 2.3(b)(2)(ii)(a) / 2.3(b)(2)(ii)(b) / 2.3(b)(2)(iii):* Statistical inventory reconciliation measurements are not being reconciled for the piping at least weekly. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the records/results of) four weekly SIR tests, or install/utilize (and submit documentation of) a valid leak detection method. » *Additional Action(s):* There is no need for the curative measure if the most recent weekly SIR test was performed but a previous one was not; this violation, however, should still be cited.
SIR_ldr	***Are the LD records being retained?*** ***Note: records must be retained for 3 years.***
Y	» No issues were found under this question.
NR **[SP2/SP5]**	» *613-2.3(g)(1):* Statistical inventory reconciliation is not being recorded, or records are not being retained for at least three years. » *Note(s):* Reconciliation records are the primary evidence that SIR is being performed; if the records are missing, reconciliation is likely not being performed (and Response **NLT**/**NLP** under Question **SIR_ld** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records/results of the last four weekly SIR tests, or perform (and submit the records/results of) four weekly SIR tests.

SIR_ldc	Was the reconciliation complete/adequate?
Y	» No issues were found under this question.
INC [SP2/SP5]	» *613-2.3(c)(8)(i) – (iii):* Statistical inventory reconciliation records do not include the minimum detectible leak rate, the leak threshold, and/or the calculated leak rate. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the records/results of) four weekly SIR tests, or install/utilize (and submit documentation of) a valid leak detection method.
QLT [SP2/SP5]	» *613-2.3(c)(8):* Statistical inventory reconciliation records do not indicate qualitative results (i.e., pass/fail/inconclusive) based on the comparison between the calculated leak rate and both the minimum detectible leak rate and the leak threshold. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records/results of the last four weekly SIR tests (with qualitative results), or perform (and submit the records/results of) four weekly SIR tests with qualitative results.
SIR_gwo	**Is the equipment in good working order?**
Y	» No issues were found under this question.
SO	» *613-1.12 / 2.3(a)(1)(i) – (ii):* The statistical inventory reconciliation equipment is inoperable. » *Note(s):* The monitoring equipment is considered inoperable if any of the following is true: - the sensor is malfunctioning; - the tank monitoring console is shown to be defective or unpowered; or - the console and the sensor do not have a connection, per the latest results of either the monthly connectivity inspections (for SP2/SP3/SP5 UST systems) or the annual operability inspections (for SP2/SP5 UST systems). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a work plan for the facility to repair or replace the inoperable equipment within 60 days after the date of the NOV.
8M	» *613-1.12 / 2.3(c)(8):* The statistical inventory reconciliation equipment is not accurate to 1/8” (over the full range of the tank's height). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must submit documentation showing that equipment capable of accurate measurement is in use.
TC	» *613-1.12 / 2.3(a)(1)(ii) / 2.3(c)(8):* The dispenser meter (i.e., totalizer) is not properly calibrated. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must properly calibrate the totalizer and perform (and submit the records/results of) four weekly SIR tests with the properly calibrated meter.

SIR_itm	*Is the equipment being inspected periodically?* ***Note: connectivity inspections are required for all UST systems [SP2/SP3/SP5]. Operability inspections are required for federally regulated UST systems [SP2/SP5].***
Y	» No issues were found under this question.
NC ***[SP2/SP5]***	» *613-2.2(g)(1):* Connectivity inspections are not being performed for the statistical inventory reconciliation equipment. » *Note(s):* Inspection records are the primary evidence that connectivity inspections are being performed; if inspections are being performed, but either the inspections are not being recorded or records are not being retained for at least three years, Response **NRC** under Question **SIR_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) a connectivity inspection.
PC ***[SP2/SP5]***	» *613-2.2(g)(1):* Connectivity inspections are not being performed for the statistical inventory reconciliation equipment at least every 30 days. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) a connectivity inspection.
XPC ***[SP2/SP5]***	» Connectivity inspections are not required because statistical inventory reconciliation is performed with non-electronic equipment.
NO ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(a) / 2.2(g)(2)(ii)(b) / 2.2(g)(2)(ii)(d):* Operability inspections are not being performed for the statistical inventory reconciliation equipment. » *Note(s):* Inspection records are the primary evidence that operability inspections are being performed; if inspections are being performed, but either the inspections are not being recorded or records are not being retained for at least three years, Response **NRO** under Question **SIR_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection.
PO ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(a) / 2.2(g)(2)(ii)(b) / 2.2(g)(2)(ii)(d):* Operability inspections are not being performed for the statistical inventory reconciliation equipment at least annually. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection.
SIR_rec	***Are the equipment inspection records being retained?*** ***Note: records must be retained for 3 years.***
Y	» No issues were found under this question.
NRC ***[SP2/SP5]***	» *613-2.2(g)(1) / 2.2(g)(3):* Connectivity inspections are not being recorded, or records are not being retained for at least three years. » *Note(s):* Inspection records are the primary evidence that connectivity inspections are being performed; if the records are missing, inspections are likely not being performed (and Response **NC** under Question **SIR_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records of the last three connectivity inspections, or perform (and submit the records of) a connectivity inspection.
NRO ***[SP2/SP5]***	» *613-2.2(g)(2) / 2.2(g)(3):* Operability inspections are not being recorded, or records are not being retained for at least three years. » *Note(s):* Inspection records are the primary evidence that operability inspections are being performed; if the records are missing, inspections are likely not being performed (and Response **NO** under Question **SIR_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records of the last operability inspection, or perform (and submit the records of) an operability inspection.

Tightness Testing (for tanks, piping, FCTs, and FCT-associated piping) [TTT/LTT/TTTF/BTTF]

Tightness testing refers to a spectrum of test methods designed to determine whether a specific component (i.e., tank, piping) has integrity.

Acceptable tank tightness testing methods generally fall under (one or more of) the following categories:

- *Volumetric test methods* involve applying (positive) pressure to the tank, and measuring any changes to liquid (i.e., petroleum) levels within the tank over time.
    - *Overfill test methods*, as the name implies, are performed for tanks that are overfilled.
    - *Underfill test methods* are performed for tanks that are only partly full.
- *Non-volumetric test methods* determine leaks using principles that generally do not involve measuring changes in liquid levels within the tank.
    - *Tracer test methods* involves adding a small amount of a tracer compound (e.g., helium or some other stable chemical marker) to the contents of the tank, then measuring tracer concentrations outside the primary containment.
    - *Ullage test methods* specifically examine the empty space above the stored liquid (i.e., the ullage).
    - *Vacuum test methods* involve applying (negative) pressure to the tank, then measuring any changes to the internal pressure over time.

Tightness testing is a poor form of leak detection. Leaks are not commonly detected in real time as the test is only conducted periodically by a technician[133], which means that leaks can continue to grow – and even become releases – in between tests. Failed tightness test results also do not always equate to leaking equipment, as non-wetted portions of the tank system component can also cause the failed results. Tightness testing is still a valid leak detection method for certain tanks and piping, but facilities are highly discouraged from using them.

[133] Technicians must be certified by the tightness testing equipment manufacturer/company.

The following illustrates the differences between tightness testing performed for conventional tanks/piping, and tightness testing performed for field-constructed tanks with a design capacity greater than 50,000 gallons, and associated piping.

SP2 Leak Detection: ***Differences between Tightness Testing Methods***	***Tank Tightness Testing [TTT]***	***Tank Tightness Testing (for FCTs) [TTTF]***

	• Not acceptable as an LD method for any tank; may only be used as a diagnostic test method
	  ○ *Leak Rate:* 0.1 gph
		• *Acceptable for:* Cat. 1/2 field-constructed tanks (FCTs) with a design capacity greater than 50,000 gallons
		• *Perform and Record Results:* Annually / Biennially / Triennially
		  ○ *Leak Rate:*
		  ▪ 0.5 gph (for annual TTTF)
		  ▪ 0.2 gph (for biennial and triennial TTTF)
		Note: TTTF is only valid (as a standalone LD method) when performed annually.

	Line Tightness Testing [LTT]	***Bulk Piping Tightness Testing (for FCT-associated piping) [BTTF]***

	• *Acceptable for:*
	  ○ Cat. 1/2 piping
	  ▪ Cat. 3 piping associated with FCTs > 50k gal.
	• *Perform and Record Results:*
	  ○ Annually (for pressurized piping)
	  ○ Every three years (for non-exempt suction piping)
	  ○ *Leak Rate:* 0.1 gph (at 1.5 times the operating line pressure)
		• *Acceptable for:* Cat. 1/2/3 piping associated with FCTs > 50k gal.
		• *Perform and Record Results:* Semiannually / Annually
		  ○ *Leak Rate:*
		  ▪ *Piping Segment Volume (PSV) < 50k gal.:*
		  1.0 gph (for semiannual BTTF)
		  0.5 gph (for annual BTTF)
		  ▪ *50k gal. ≤ PSV < 75k gal.:*
		  1.5 gph (for semiannual BTTF)
		  0.75 gph (for annual BTTF)
		  ▪ *75k gal. ≤ PSV < 100k gal.:*
		  2.0 gph (for semiannual BTTF)
		  1.0 gph (for annual BTTF)
		  ▪ *PSV ≥ 100k gal.*
		  3.0 gph (for semiannual BTTF)
		  1.5 gph (for annual BTTF)

The National Work Group on Leak Detection Evaluations (NWGLDE) website[127] has a list of acceptable line testing methods that meet the requirements above.

Tightness testing reports must be retained for (at least) three years or until the next test, whichever is later. (Copies must be forwarded to the Regional DEC office within 30 days after the test is performed.) These reports must have the following information.

SP2 LD Records: ***Required Information***	***Tank Tightness Testing [TTT], Line Tightness Testing [LTT], Tank Tightness Testing (for FCTs) [TTTF], and Bulk Piping Tightness Testing (for FCT-associated piping) [BTTF]***

	• Tank ID number
	• Type of petroleum stored
	• Date/time of testing
	• Tightness test method performed
	• Type of component test (e.g., tank, pressurized/suction piping, field-constructed tank or associated piping, etc.)
	• Leak threshold (in gallons per hour)
	• Measured leak rate (in gallons per hour)
	• A statement from the technician that the test detects leaks for the component (at specified rates/operating pressures), as required
	• Technician's information:
	  ○ Testing credentials
	  ○ Testing company name/address
	  ○ Name/signature
	• Test results (i.e., pass/fail), including all applicable calculations that contributed to the results
	• Any relevant notes regarding the test, the component being tested, the tank system/facility, etc.

A leak is suspected when the tank system component fails the tightness test. Failed test results must be reported to the Spill Hotline within two hours after discovery.

Issues

- **Electronic Line Leak Detectors (ELLDs) Used for Line Tightness Testing**

  Line tightness testing is a supplement to – and not a substitute for – ALLDs for Cat. 1/2 pressurized piping; however, some commercial ELLDs can be used in lieu of line tightness testing if capable of performing a test equivalent to a line tightness test. ELLDs connected to an appropriate tank console must be certified, programmed, and calibrated to test for 0.1-gph leaks at 1.5 times the normal operating pressure[134], annually. The records must also then specify the ELLD (and tank monitoring console) model used.

  Failed results of the (equivalent) 0.1-gph leak test must be reported to the Spill Hotline – as a suspected leak – within two hours after discovery, unless:

  - the ELLD is found to be defective and is repaired/replaced/recalibrated, AND additional monitoring does not confirm the initial results; or
  - the results were investigated and determined to be a non-spill event (e.g., caused by dispensing from the tank during testing).

  The ELLD is also subject to connectivity and operability inspections, as well as 30-day walkthrough inspections[109].

- **Tightness Testing in Accordance with 6 NYCRR Section 613-2.3**

  Copies of any tightness test that must be performed in accordance with 6 NYCRR Section 613-2.3 – even if not required as a periodic leak detection method – must still be forwarded to the Regional DEC office within 30 days after the test.

Questions

TTTF	***Tank Tightness Testing (FCTs)***
TTTF_val	***Is this LD method valid for the tank system?*** ***Note: FCT tightness testing is a valid (primary) LD method only for SP2 (or SP5), Cat. 1/2 field-constructed USTs with a design capacity greater than 50,000 gallons.***
Y	» No issues were found under this question.
NV	» *613-2.3(b)(1):* FCT tightness testing is not a valid leak detection method for the tank (and there are no other valid leak detection methods in use). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid leak detection method.
NW [SP2/SP5]	» *613-2.3(e)(1) / 2.3(e)(2)(i) / 2.3(e)(2)(ii) / 2.3(e)(4)(iii)(a):* The FCT tightness testing method cannot be shown to meet standards. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) an FCT tightness test within 30 calendar days after the date of the NOV.
SM	» FCT tightness testing either is not required for the tank or supplements a different LD method that is being used to meet leak detection requirements.

[134] The NWGLDE website has a list of ALLDs that meet this requirement.

TTTF_Id	*Is the LD method being performed periodically?*
Y	» No issues were found under this question.
NL ***[SP2/SP5]***	» *613-2.3(b)(1)(i)(b) / 2.3(b)(1)(ii)(b) / 2.3(e)(1) / 2.3(e)(2)(i) / 2.3(e)(2)(ii) / 2.3(e)(4)(iii)(a):* FCT tightness testing is not being performed for the tank. » *Note(s):* Test results are the primary evidence that tightness testing is being performed; if testing is being performed, but either a copy of the test results was not submitted to the DEC within 30 days after the test, or test results are not being retained for the required minimum duration, Response **NR** or **NS** under Question **TTTF_Idr** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the results of) a FCT tightness test, or install/utilize (and submit documentation of) a valid leak detection method.
PL1 ***[SP2/SP5]***	» *613-2.3(b)(1)(i)(b) / 2.3(b)(1)(ii)(b) / 2.3(e)(1) / 2.3(e)(4)(iii)(a):* FCT tightness testing is not being performed for the tank at least annually. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the results of) a FCT tightness test, or install/utilize (and submit documentation of) a valid leak detection method. » *Additional Action(s):* There is no need for the curative measure if the most recent annual tightness test was performed but a previous one was not; this violation, however, should still be cited.
PL2 ***[SP2/SP5]***	» *613-2.3(b)(1)(i)(b) / 2.3(b)(1)(ii)(b) / 2.3(e)(2)(ii):* FCT tightness testing is not being performed for the tank at least biennially. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the results of) a FCT tightness test, or install/utilize (and submit documentation of) a valid leak detection method. » *Additional Action(s):* There is no need for the curative measure if the most recent biennial tightness test was performed but a previous one was not; this violation, however, should still be cited.
PL3 ***[SP2/SP5]***	» *613-2.3(b)(1)(i)(b) / 2.3(b)(1)(ii)(b) / 2.3(e)(2)(i):* FCT tightness testing is not being performed for the tank at least triennially. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the results of) a FCT tightness test, or install/utilize (and submit documentation of) a valid leak detection method. » *Additional Action(s):* There is no need for the curative measure if the most recent triennial tightness test was performed but a previous one was not; this violation, however, should still be cited.

TTTF_ldr	***Are the LD records being retained?*** ***Note: records must be retained for 3 years or until the next test, whichever is later.***
Y	» No issues were found under this question.
NR ***[SP2/SP5]***	» *613-2.3(g)(2):* FCT tightness test results are not being retained for at least three years or until the next test (whichever is later). » *Note(s):* Test results are the primary evidence that tightness testing is being performed; if test results cannot be produced AND copies were not submitted to the DEC within 30 days after the test, tightness testing is likely not being performed (and Response **NL** under Question **TTTF_ld** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the results of the last test, or perform (and submit the results of) a FCT tightness test.
NS ***[SP2/SP5]***	» *613-2.3(g)(3):* A copy of the FCT tightness test results was not submitted to the DEC within 30 days after the test was performed. » *Note(s):* Test results are the primary evidence that tightness testing is being performed; if test results cannot be produced AND copies were not submitted to the DEC within 30 days after the test, tightness testing is likely not being performed (and Response **NL** under Question **TTTF_ld** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the results of the last test, or perform (and submit the results of) a FCT tightness test.
TTTF_ldc	***Was the testing complete/adequate?***
Y	» No issues were found under this question.
IN ***[SP2/SP5]***	» *613-2.3(g)(2):* The FCT tightness test results do not have all of the required information. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a FCT tightness test and include all required information.
QT ***[SP2/SP5]***	» *613-2.3(c)(3)(ii) / 2.3(e)(1) / 2.3(e)(2)(i) / 2.3(e)(2)(ii) / 2.3(e)(4)(iii)(a):* The FCT tightness test was not performed by a qualified technician. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a FCT tightness test.

LTT	Line Tightness Testing
LTT_val	**Is this LD method valid for the tank system?** **Note: line tightness testing is a valid (piping) LD method only for certain piping Categories/pumping methods.**
Y	» No issues were found under this question.
NV	» *613-2.3(b)(2):* Line tightness testing is not a valid leak detection method for the piping (and there are no other valid leak detection methods in use). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid leak detection method.
NW	» *613-2.3(d)(2)(i):* The line tightness testing method cannot be shown to meet standards. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a line tightness test within 30 calendar days after the date of the NOV.
SM	» Line tightness testing either is not required for the piping or supplements a different LD method that is being used to meet leak detection requirements.
LTT_ld	**Is the LD method being performed periodically?**
Y	» No issues were found under this question.
NLPP	» *613-2.3(b)(2)(i)(a)(2) / 2.3(b)(2)(i)(b)(2):* Line tightness testing is not being performed for the pressurized piping. » *Note(s):* Test results are the primary evidence that tightness testing is being performed; if testing is being performed, but either a copy of the test results was not submitted to the DEC within 30 days after the test, or test results are not being retained for the required minimum duration, Response **NR** or **NS** under Question **LTT_ldr** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the results of) a line tightness test, or install/utilize (and submit documentation of) a valid leak detection method.
PLPP	» *613-2.3(b)(2)(i)(a)(2) / 2.3(b)(2)(i)(b)(2):* Line tightness testing is not being performed for the pressurized piping at least annually. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the results of) a line tightness test, or install/utilize (and submit documentation of) a valid leak detection method. » *Additional Action(s):* There is no need for the curative measure if the most recent annual tightness test was performed but a previous one was not; this violation, however, should still be cited.
NLSP	» *613-2.3(b)(2)(ii)(a) / 2.3(b)(2)(ii)(b):* Line tightness testing is not being performed for (non-exempt) suction piping. » *Note(s):* Test results are the primary evidence that tightness testing is being performed; if testing is being performed, but either a copy of the test results was not submitted to the DEC within 30 days after the test, or test results are not being retained for the required minimum duration, Response **NR** or **NS** under Question **LTT_ldr** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the results of) a line tightness test, or install/utilize (and submit documentation of) a valid leak detection method.
PLSP	» *613-2.3(b)(2)(ii)(a) / 2.3(b)(2)(ii)(b):* Line tightness testing is not being performed for (non-exempt) suction piping at least triennially. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the results of) a line tightness test, or install/utilize (and submit documentation of) a valid leak detection method. » *Additional Action(s):* There is no need for the curative measure if the most recent annual/triennial tightness test was performed but a previous one was not; this violation, however, should still be cited.

LTT_ldr	***Are the LD records being retained?*** ***Note: records must be retained for 3 years or until the next test (whichever is later) for piping that is part of a SP2/SP3 (or SP5) UST system.***
Y	» No issues were found under this question.
NR	» *613-2.3(g)(2):* Line tightness test results are not being retained for at least three years or until the next test (whichever is later). » *Note(s):* Test results are the primary evidence that tightness testing is being performed; if test results cannot be produced AND copies were not submitted to the DEC within 30 days after the test, tightness testing is likely not being performed (and Response **NLPP**/**NLSP** under Question **LTT_ld** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the results of the last test, or perform (and submit the results of) a line tightness test.
NS	» *613-2.3(g)(3):* A copy of the line tightness test results was not submitted to the DEC within 30 days after the test was performed. » *Note(s):* Test results are the primary evidence that tightness testing is being performed; if test results cannot be produced AND copies were not submitted to the DEC within 30 days after the test, tightness testing is likely not being performed (and Response **NLPP**/**NLSP** under Question **LTT_ld** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the results of the last test, or perform (and submit the results of) a line tightness test.
LTT_ldc	***Was the testing complete/adequate?***
Y	» No issues were found under this question.
IN	» *613-2.3(g)(2):* The line tightness test results do not have all of the required information. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a line tightness test and include all required information.
QT	» *613-2.3(d)(2)(ii):* The line tightness test was not performed by a qualified technician. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a line tightness test.

BTTF	Bulk Piping Tightness Testing (FCTs)
BTTF_val	***Is this LD method valid for the tank system?*** ***Note: bulk piping tightness testing is a valid (primary) LD method only for SP2/SP4 (or SP5) piping associated with field-constructed tanks with a design capacity greater than 50,000 gallons.***
Y	» No issues were found under this question.
NV	» *613-2.3(b)(2):* Bulk piping tightness testing is not a valid leak detection method for the piping (and there are no other valid leak detection methods in use). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid leak detection method.
NW [SP2/SP4/SP5]	» *613-2.3(f)(1)(ii) / 2.3(f)(1)(iii) / 2.3(f)(3)(iii)(a):* The bulk piping tightness testing method cannot be shown to meet standards. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a bulk piping tightness test within 30 calendar days after the date of the NOV.
SM	» Bulk piping tightness testing either is not required for the piping or supplements a different LD method that is being used to meet leak detection requirements.
BTTF_ld	***Is the LD method being performed periodically?***
Y	» No issues were found under this question.
NL [SP2/SP4/SP5]	» *613-2.3(b)(2)(iii) / 2.3(f)(1)(i) / 2.3(f)(3)(iii)(a):* Bulk piping tightness testing is not being performed for the piping. » *Note(s):* Test results are the primary evidence that tightness testing is being performed; if testing is being performed, but either a copy of the test results was not submitted to the DEC within 30 days after the test, or test results are not being retained for the required minimum duration, Response **NR** or **NS** under Question **BTTF_ldr** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the results of) a bulk piping tightness test, or install/utilize (and submit documentation of) a valid leak detection method.
PL [SP2/SP4/SP5]	» *613-2.3(b)(2)(iii) / 2.3(f)(1)(i) / 2.3(f)(3)(iii)(a):* Bulk piping tightness testing is not being performed for the piping at least semiannually/annually. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the results of) a bulk piping tightness test, or install/utilize (and submit documentation of) a valid leak detection method. » *Additional Action(s):* There is no need for the curative measure if the most recent annual tightness test was performed but a previous one was not; this violation, however, should still be cited.

BTTF_ldr	***Are the LD records being retained?*** ***Note: records must be retained for 3 years or until the next test, whichever is later.***
Y	» No issues were found under this question.
NR ***[SP2/SP4/SP5]***	» *613-2.3(g)(2):* Bulk piping tightness test results are not being retained for at least three years or until the next test (whichever is later). » *Note(s):* Test results are the primary evidence that tightness testing is being performed; if test results cannot be produced AND copies were not submitted to the DEC within 30 days after the test, tightness testing is likely not being performed (and Response **NL** under Question **BTTF_ld** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the results of the last test, or perform (and submit the results of) a bulk piping tightness test.
NS ***[SP2/SP4/SP5]***	» *613-2.3(g)(3):* A copy of the bulk piping tightness test results was not submitted to the DEC within 30 days after the test was performed. » *Note(s):* Test results are the primary evidence that tightness testing is being performed; if test results cannot be produced AND copies were not submitted to the DEC within 30 days after the test, tightness testing is likely not being performed (and Response **NL** under Question **BTTF_ld** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the results of the last test, or perform (and submit the results of) a bulk piping tightness test.
BTTF_ldc	***Was the testing complete/adequate?***
Y	» No issues were found under this question.
IN ***[SP2/SP4/SP5]***	» *613-2.3(g)(2):* The bulk piping tightness test results do not have all of the required information. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a bulk piping tightness test and include all required information.
QT ***[SP2/SP4/SP5]***	» *613-2.3(d)(2)(ii) / 2.3(f)(1)(i) / 2.3(f)(3)(iii)(a):* The bulk piping tightness test was not performed by a qualified technician. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a bulk piping tightness test.

Automatic Line Leak Detector [ALLD]

Automatic line leak detectors (ALLDs) are in-line devices that monitor for leaks based on losses in piping pressure. There are two types of ALLDs:

- Electronic line leak detectors (ELLDs) use sensors connected to a tank monitoring console that monitors the pressure downstream of the valve when the submersible turbine pump (STP) is on; a leak in the piping translates to a lower line pressure, which then causes the ELLD to stop flow through the piping.
- Mechanical line leak detectors (MLLDs) are pressure-actuated valves designed to only allow petroleum to flow if the line pressure downstream of the valve builds up when the STP is on; a leak in the piping prevents this build-up in pressure, which causes the MLLD to restrict – not stop – flow through the piping.

Both types of ALLDs are often screwed onto the top of the STP but can be differentiated by the presence of copper tubing on MLLDs (as opposed to electrical wiring – if any – on ELLDs). ELLDs also cause audible and/or visual alarms (often on the tank console) when tripped, whereas MLLDs do not. Either type of ALLD should not be separate from the STP as ALLDs can only detect leaks downstream from it – any measurable piping segment between the STP and the ALLD would not have leak detection.

ALLDs must be able to detect 3-gph leaks at a line pressure of 10 psi within one hour. The National Work Group on Leak Detection Evaluations (NWGLDE) website has a list of ALLDs that meet this requirement.

The connectivity and operability of (any) tank monitoring consoles and ALLDs must be inspected on a regular basis. Inspection records must be retained for (at least) three years and have the following information.

<table>
<tr><th>SP2 LD Inspections</th><th>Electronic Line Leak Detector (ELLD)</th><th>Mechanical Line Leak Detector (MLLD)</th></tr>
<tr><td>(30-Day) Connectivity Inspection</td><td>• Tank ID number
• Date/time of inspection
• Verification that the tank monitoring console and the electronic line leak detector (ELLD) are communicating with each other
• Any issues identified with the criterion above
• Description of actions taken to rectify any issues identified</td><td></td></tr>
<tr><td rowspan="3">(Annual) Operability Inspection
(i.e., Functionality Test)</td><td colspan="2">• Tank ID number
• Date/time of inspection/testing
• Testing conditions:
○ Simulated leak flowrates (in gph)
○ Line pressure(s) (in psi)
○ Test duration (in minutes/hours)</td></tr>
<tr><td>• Verification of the following:
○ Tank Monitoring Console (or Another System Controller)
▪ Console alarm is functional.
▪ Console’s backup battery has power.
▪ Tank monitoring console is properly configured/calibrated.
○ Electronic Line Leak Detector (ELLD):
▪ Test simulated a 3-gph leak at 10 psi within one hour.
▪ ELLD triggered an alarm for the simulated leak, and either stopped petroleum flow or shut down the STP.
▪ STP cycles on and off under normal operating conditions.</td><td>• Verification of the following:
○ Mechanical Line Leak Detector (MLLD):
▪ Test simulated a 3-gph leak at 10 psi within one hour.
▪ MLLD restricted petroleum flow for the simulated leak.
▪ STP cycles on and off under normal operating conditions.</td></tr>
<tr><td colspan="2">• Any issues identified with the criteria above
• Description of actions taken to rectify any issues identified
• Any relevant notes regarding the test (including how the leak was simulated, how many tests were conducted before the ELLD/MLLD was considered to have failed the test), the line being tested (e.g., where is the ALLD relative to any operating valve or solenoid/anti-siphon valve on the same line), and the tank system/facility</td></tr>
</table>

Failed ALLDs must be replaced (as repairing it is nearly impossible), but a tripped ALLD signifies a suspected leak. Activated ALLDs must be reported to the Spill Hotline within two hours after discovery, unless:

- the ALLD is found to be defective and is immediately repaired/replaced/recalibrated, AND additional monitoring does not confirm the initial results; or
- the results were investigated and determined to be a non-spill event (e.g., from a power surge).

Facilities are advised to keep a running history of all activations of the ALLD, which includes the date/time of activation, what caused it, and what was done to address it.

ELLDs are also subject to connectivity and operability inspections; all ALLDs are subject to 30-day walkthrough inspections[109].

Issues

- **Weather Changes Affecting MLLDs**

  MLLDs can be tripped when the temperature of the petroleum (in the piping) drops with the weather. Low temperatures cause petroleum to contract, causing a drop in the line pressure, which in turn trips the MLLD. Such cases must be treated as suspected leaks unless the facility can definitively prove that the MLLD was tripped solely due to weather conditions.

- **Tampering with ALLDs**

  ALLDs are sometimes tampered with. Inspectors should look at the ALLD itself in the tank-top sump for evidence of tampering or other factors which might interfere with its ability to actuate. (The parts of the ALLD that stop the flow of petroleum could have been taken out, for example, leaving the shell screwed onto the STP to give the appearance of having a functional ALLD.) Inspectors are advised review the functionality test if there is reason to doubt its ability to detect leaks. They can also ask the operator to operate the tank monitoring console and show that the ELLD is not in alarm.

- **ALLDs on Siphoned/Manifolded Tanks**

  Specific tank configurations warrant the right number, type, and placement of ALLDs to properly perform leak detection of the piping connecting these tanks.

  Siphoned tanks in series must have one ALLD at the STP of the master/primary tank; the siphon bar connecting the tanks is considered to be safe suction piping that does not require leak detection.

  Siphoned tanks in parallel and manifolded tanks must have only one ALLD – an ELLD – placed as far upstream as possible to detect leaks from all piping both upstream and downstream of the manifold, provided that there are no valves (e.g., check valves, solenoid valves) that isolate any portion of the manifolded piping. This ELLD must also be capable of shutting down the STPs if a leak is detected. Such configurations must not have two ALLDs (at the STPs of both tanks) because doing so prevents either ALLD from detecting 3-gph leaks (i.e., the smallest leak that either ALLD can detect are 6-gph leaks).

  Inspectors are advised to check the type and locations of all ALLDs particularly for these tank configurations.

- **ALLD Placement Relative to the Solenoid/Anti-Siphon Valve**

  Solenoid/anti-siphon valves and ALLDs may be fitted to the same piping, but ALLDs will only work when downstream of the solenoid/anti-siphon valve. This means that the ALLD must be separate from the STP (i.e., fitted onto the piping separately) such that petroleum goes through the STP first, then the solenoid/anti-siphon valve, then the ALLD.

- **ALLDs on Tanks with Multiple Pressurized Lines**

  Some tanks are fitted with multiple STPs/pressurized lines (that are not manifolded anywhere downstream of the tank); each line must have its own ALLD.

Questions

ALLD_val	***Is this LD method valid for the tank system?*** ***Note: ALLDs are valid only for pressurized piping that is part of certain tank systems.***
Y	» No issues were found under this question.
NV	» 613-2.3(b)(2): Automatic line leak detector is not a valid leak detection method for the piping (and there are no other valid leak detection methods in use). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid leak detection method.
NW	» 613-2.3(d)(1): The automatic line leak detector cannot be shown to meet standards. » *Note(s):* This Response also includes any automatic line leak detector that is not designed for the petroleum stored in the tank system. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a line tightness test within 30 calendar days after the date of the NOV.
ALLD_gwo	***Is the equipment in good working order?***
Y	» No issues were found under this question.
AI	» 613-2.3(a)(1)(i): The automatic line leak detector is positioned such that it would not detect a leak (from the downstream piping) if one were to occur. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either install an additional automatic line leak detector(s) or reinstall the existing ALLD such that entire piping system is monitored for leaks by the ALLD(s), and submit documentation that the ALLD(s) is properly installed relative to the piping configuration. In addition, the facility must perform (and submit the records of) an operability inspection within 30 calendar days after the date of the NOV.
AO	» 613-1.12 / 2.3(a)(1)(i) – (ii): The automatic line leak detector is inoperable. » *Note(s):* The automatic line leak detector is considered inoperable if any of the following is true: - the ALLD is malfunctioning; - the ALLD is shown to be damaged or unpowered; - the console and the ELLD do not have a connection, per the latest results of either the monthly connectivity inspections (for SP2/SP3/SP5 UST systems) or the annual operability inspections (for SP2/SP5 UST systems); - the ALLD is not able to detect 3-gph leaks at 10 psi per the latest results of the annual operability inspections (for SP2 UST systems); or - the ALLD is placed incorrectly along the piping such that the ALLD cannot detect leaks from all portions of the piping. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must repair or replace (and submit repair/replacement documentation for) the automatic line leak detector, and perform (and submit the records of) an operability inspection.
NX	» 613-1.4(b): The automatic line leak detector could not be accessed for inspection. » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must submit documentation that the automatic line leak detector is present and in good working order/properly installed.

ALLD_itm	***Is the equipment being inspected periodically?*** ***Note: connectivity inspections are required for all UST systems [SP2/SP3/SP5]. Operability inspections are required for federally regulated UST systems [SP2/SP5].***
Y	» No issues were found under this question.
NC ***[SP2/SP3/SP5]***	» 613-2.2(g)(1): Connectivity inspections are not being performed for the automatic line leak detector. » *Note(s):* Inspection records are the primary evidence that connectivity inspections are being performed; if inspections are being performed, but either the inspections are not being recorded or records are not being retained for at least three years, Response **NRC** under Question **ALLD_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) a connectivity inspection.
PC ***[SP2/SP3/SP5]***	» 613-2.2(g)(1): Connectivity inspections are not being performed for the automatic line leak detector at least every 30 days. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) a connectivity inspection.
XPC ***[SP2/SP3/SP5]***	» Connectivity inspections are not required because the automatic line leak detector is non-electronic.
NO ***[SP2/SP5]***	» 613-2.2(g)(2)(ii)(a) – (c): Operability inspections are not being performed for the automatic line leak detector. » *Note(s):* Inspection records are the primary evidence that operability inspections are being performed; if inspections are being performed, but either the inspections are not being recorded or records are not being retained for at least three years, Response **NRO** under Question **ALLD_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection.
PO ***[SP2/SP5]***	» 613-2.2(g)(2)(ii)(a) – (c): Operability inspections are not being performed for the automatic line leak detector at least annually. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection.
ALLD_rec	***Are the equipment inspection records being retained?*** ***Note: records must be retained for 3 years (for pressurized piping that is part of SP2/SP3/SP5 UST systems).***
Y	» No issues were found under this question.
NRC ***[SP2/SP3/SP5]***	» 613-2.2(g)(1) / 2.2(g)(3): Connectivity inspections are not being recorded, or records are not being retained for at least three years. » *Note(s):* Inspection records are the primary evidence that connectivity inspections are being performed; if the records are missing, inspections are likely not being performed (and Response **NC** under Question **ALLD_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records of the last three connectivity inspections, or perform (and submit the records of) a connectivity inspection.
NRO ***[SP2/SP5]***	» 613-2.2(g)(2) / 2.2(g)(3): Operability inspections are not being recorded, or records are not being retained for at least three years. » *Note(s):* Inspection records are the primary evidence that operability inspections are being performed; if the records are missing, inspections are likely not being performed (and Response **NO** under Question **ALLD_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records of the last operability inspection, or perform (and submit the records of) an operability inspection.

Secondary Containment

Purpose

Secondary containment acts as the last line of defense in the event of a spill from any portion of the tank system that routinely contains petroleum. This is particularly important with regards to tank system components (i.e., tank, piping/ancillary equipment) in contact with the ground and dispensers, as portions of these equipment may not be readily visible to an operator, and petroleum may leak – and reach the lands and/or waters of the State (i.e., become a release) – through these nonvisible areas.

Requirements

Secondary containment refers to equipment/structures external to the primary containment[135] (that is in contact with the ground), with the express purpose of containing spills and preventing releases before the operator is made aware of and addresses the spill and any possible equipment failure. Facilities must meet the following overall secondary containment requirements[136] (as applicable).

SP2 Secondary Containment	***Requirements***

General	• SC equipment must be:
	  ○ installed in accordance with the manufacturer's instructions (and an acceptable code of practice[137]);
	  ○ able to contain leaks from the primary containment (until detected and remediated); and
	  ○ prevent releases.
	• Under-dispenser containment (UDC) must also:
	  ○ be liquid-tight on its sides, on the bottom, and at any penetrations; and
	  ○ either:
	  ▪ allow for visual inspection and access to the components within it; or
	  ▪ be continuously electronically monitored for leaks from the dispenser system.

Periodic Equipment Inspections/ Testing/ Monitoring	• The integrity[138] of containment sumps used for piping interstitial monitoring must either be:
	  ○ monitored at least annually (for double-walled sumps); or
	  ○ tested at least every three years.
	  ▪ Testing must be performed in accordance with[139]:
	  ↓ the manufacturer's requirements (if the manufacturer has developed such requirements); or
	  ↓ PEI RP1200 (2019).
	• Containment sumps are also subject to walkthrough inspections[140] performed annually.

(Suspected) Spill Reporting	The following are considered suspected leaks that must be reported to the Spill Hotline within two hours after discovery[141]: • Unexplained presence of water/petroleum in the interstice of a double-walled sump • Failed sump integrity monitoring/testing results

Recordkeeping	*Retain:*
	• *Equipment Inspection/Testing/Monitoring Records:*
	  ○ *Integrity Monitoring Records:* For the entire duration that the DW sump is monitored PLUS three years
	  ○ *Integrity Testing Records:* For three years or until the next test, whichever is later
	  ○ *Walkthrough Inspection Records:* For three years
	• *Repair (and Post-Repair)[142] Records:* Until the tank system is permanently closed

DEC may require facilities to conduct additional inspections/testing/monitoring if the facility has suspected leaks or inspections/testing/monitoring that have not been performed. Facilities must complete this additional inspection/testing/monitoring within ten days after receipt of the request, or DEC will conduct inspections/testing/monitoring at the facility's expense.

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[135] 6 NYCRR subdivision 613-1.3(bd): *Primary containment* means any tank, piping, or ancillary equipment which, under normal operating conditions, routinely contains petroleum. This generally excludes fill pipes and vent pipes, among others. Secondary containment requirements also exclude any aboveground piping (not in contact with the ground) from which a leak is readily visible.
[136] Secondary containment requirements for SP2 tank systems are found in 6 NYCRR paragraphs 613-2.1(b)(1), (2), (5) and (c)(1), (2).
[137] See **Installation** on p. 52.
[138] Integrity monitoring/testing requirements for SP2 containment sumps are found in 6 NYCRR subdivision 613-2.2(f).
[139] Facilities may also comply with a code of practice developed by a nationally recognized association or independent testing laboratory and approved by the DEC.
[140] See **Walkthrough Inspections** on p. 64.
[141] See **Spills** on p. 460.
[142] See **Repairs** on p. 53.

Conventional Tank, Piping, and Dispenser Secondary Containment

Tanks must utilize one of the following forms of secondary containment and meet applicable requirements[143].

Secondary Containment: SP2 Tanks	***Cat. 1 Tank[144]***	***Cat. 2 Tank***	***Cat. 3 Tank***
Double-Wall (DW) Construction	Any form of secondary containment acceptable for Cat. 2 or 3 tanks	*Designed and Constructed:* In accordance with: • any Cat. 3 standard; or • the performance standards in 6 NYCRR subclause 613-2.1(b)(1)(ii)(*e*)(*2*)(*i*)	*Designed and Constructed:* In accordance with one of the following[139]: • *Fiberglass-Reinforced Plastic (FRP) Tanks:* ○ UL 1316 (January 1994) ○ UL 1856 (June 2020) • *Cathodically Protected Steel Tanks:* ○ STI F841 (January 2006) ○ UL 58 (December 1996) ○ UL 1746 (January 2007) • *Clad/Jacketed Steel Tanks:* ○ STI F922 (January 2013) ○ UL 58 (December 1996) ○ UL 1746 (January 2007) • *Tanks in Inaccessible Areas:* ○ UL 80 (September 2007) ○ UL 142 (December 2006) ○ ULC-S601-07 (2007)
Vaults		*Designed and Constructed:* In accordance with performance standards in 6 NYCRR subclause 613-2.1(b)(1)(ii)(*e*)(*2*)(*i*)	*Designed and Constructed:* In accordance with performance standards in 6 NYCRR subclause 613-2.1(b)(1)(iii)(*e*)(*3*)(*ii*)
Cut-Off Walls		*Designed and Constructed:* In accordance with performance standards in 6 NYCRR subclause 613-2.1(b)(1)(ii)(*e*)(*2*)(*iii*)	
Impervious Underlayment		*Designed and Constructed:* In accordance with performance standards in 6 NYCRR subclause 613-2.1(b)(1)(ii)(*e*)(*2*)(*iv*)	
No Secondary Containment Required	No standard(s) specified		

[143] Conventional SC standards/requirements for SP2 tanks are found in 6 NYCRR clauses 613-2.1(b)(1)(ii)(*e*) & (iii)(*e*).

[144] Cat. 1 tanks were not required to meet SC requirements to avoid retroactive imposition of then-new requirements.

Piping in contact with the ground must utilize one of the following forms of secondary containment and meet applicable requirements[145].

Secondary Containment: SP2 Piping	***Cat. 1 Piping[146]***	***Cat. 2 Piping[146]***	***Cat. 3 Piping[147]***

Double-Wall (DW) Construction + Containment Sump	Any form of secondary containment acceptable for Cat. 3 piping		*(DW Piping) Designed and Constructed:* In accordance with one of the following[139]:
			• *Noncorrodible Piping:*
			  ○ UL 971 (February 2006)
			  ○ ULC-S660-08 (2008)
			• *Cathodically Protected Metal Piping:*
			  ○ UL 971A (October 2006)
			
			(Containment Sumps Used for Piping Interstitial Monitoring) Perform: One of the following as applicable:
			• Integrity monitoring, at least annually (for DW sumps)
			• Integrity tested at least every three years.

No Secondary Containment Required	No standard(s) specified		

All “new” dispensers connected to a SP2 UST system must have dispenser sumps (also known as under-dispenser containment or UDC)[148]:

- For new tank systems/dispensers, UDC must be installed at tank system/dispenser installation.
- For existing tank systems/dispensers, UDC must be installed when the dispenser AND every equipment necessary to connect the dispenser to the buried piping (i.e., check/shear valves, risers, connectors, other ancillary equipment beneath the dispenser, etc.) is replaced, reinstalled, or removed such that a dispenser sump can be installed.

[145] Conventional SC standards/requirements for SP2 piping are found in 6 NYCRR clause 613-2.1(b)(2)(iii)(*c*).
[146] Cat. 1/2 piping were not required to meet secondary containment requirements to avoid retroactive imposition of then-new requirements.
[147] Other forms of piping secondary containment do exist, but these technologies are considered obsolete and will be reviewed for compliance on a case-by-case basis.
[148] Dispenser system requirements for SP2 tank systems are found in 6 NYCRR paragraph 613-2.1(b)(5).

Alternative Piping Secondary Containment

Containing leaks from piping associated with field-constructed tanks (FCTs) with a design capacity greater than 50,000 gallons[149], may be challenging given conventional forms of secondary containment. Such piping may then comply with the following alternative requirements[150] (as applicable) in lieu of their equivalent conventional counterparts.

Secondary Containment: SP2 Piping	***Cat. 1 Piping*** ***(associated with FCTs > 50k gal.)***	***Cat. 2 Piping*** ***(associated with FCTs > 50k gal.)***	***Cat. 3 Piping*** ***(associated with FCTs > 50k gal.)***

Double-Wall (DW) Construction + Containment Sump	Any form of secondary containment acceptable for Cat. 3 piping		DW piping must be designed and constructed in accordance with one of the following[139]:
			• *Noncorrodible Piping:*
			  ○ UL 971 (February 2006)
			  ○ ULC-S660-08 (2008)
			• *Cathodically Protected Metal Piping:*
			  ○ UL 971A (October 2006)
			
			The integrity of containment sumps (used for piping interstitial monitoring) must either be:
			• monitored at least annually (for DW sumps); or
			• tested at least every three years.

No Secondary Containment Required	No standard(s) specified		

[149] These tanks were previously deferred under 40 CFR Part 280.

[150] Alternative SC requirements for SP2 piping associated with FCTs (> 50k gal.) are found in 6 NYCRR subparagraph 613-2.1(c)(2)(iii).

Questions

SC_trc	***Tank SC Equipment: all SC equipment that apply to the tank – including those required and any supplementary equipment installed – should be selected.***
DWU	» Double-Walled (UST) Construction
VIA	» (Inaccessible) Vault
SL	» Synthetic Liner
EL	» Excavation Liner
IA	» Remote Impounding Area
IU	» Impervious Underlayment
O	» Other
NU ***[SP2/SP3/SP5]***	» *613-2.1(b)(1)(ii)(e) / 2.1(b)(1)(iii)(e) / 2.1(c)(1)(ii) / 2.1(c)(1)(iii):* The tank is not equipped with the required secondary containment. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to permanently close the tank system within 60 days after the date of the NOV.
XTU ***[SP2/SP3/SP5]***	» Tank secondary containment is not required because the tank is a Cat. 1 UST.
SC_tri	***Is the registered tank SC equipment accurate?***
Y	» No issues were found under this question.
IN	» *613-1.9(a)(4):* The registered tank secondary containment is inaccurate. » *Note(s):* This Response does not include expired facility registrations, inaccurate facility information, unregistered tanks, or unregistered facilities; such violations should be captured under Question **REG_info**. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must correct the site registration online to reflect the tank secondary containment. » *Additional Action(s):* The inspector should note the specific inaccuracy with the tank secondary containment under Question **SC_tnov**, to include it in the list of registration discrepancies (in the NOV) that need to be corrected.
SC_tnov	***Which tank SC equipment should be noted in the NOV?***

SC_prc	***Piping SC Equipment: all SC equipment that apply to the piping – including those required and any supplementary equipment installed – should be selected.***
DWU	» Double-Walled (Underground) Piping
TL	» Trench Liner
IA	» Remote Impounding Area
DK	» Diking
VA	» (Accessible) Vault
DWA	» Double-Walled (Aboveground) Piping
O	» Other
NP ***[SP2/SP5]***	» *613-2.1(b)(2)(iii)(c) / 2.1(c)(2)(iii):* The piping is not equipped with the required secondary containment. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to replace the piping (with double-walled piping) within 60 days after the date of the NOV.
NAE ***[SP2/SP5]***	» *613-2.1(b)(2)(iii)(c):* The ancillary equipment is not equipped with the required secondary containment. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to secondarily contain the ancillary equipment within 60 days after the date of the NOV.
XTP ***[SP2/SP5]***	» Piping secondary containment is not required because the piping either is not Cat. 3 piping that is part of a SP2/SP5 UST system or complies with alternative piping requirements.
XTS ***[SP2/SP5]***	» Piping secondary containment is not required because the piping is Cat. 3 safe suction piping.
XTA ***[SP2/SP5]***	» Ancillary equipment secondary containment is not required because the ancillary equipment is not Cat. 3 equipment that is part of a SP2/SP5 UST system.
NXC	» *613-1.4(b):* The (non-UDC) containment sump could not be accessed for inspection (e.g., locked/jammed sump cover, sump not designed to be accessed, no tool to remove sump lid). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must submit documentation showing that the containment sump is present and in good working order. » *Additional Action(s):* The inspector should conduct a follow-up inspection (where possible) to observe the containment sump rather than rely on installation documentation or photographs from the facility. Containment sumps associated with SP2/SP5 UST systems must allow for visual inspections.
SC_pri	***Is the registered piping SC equipment accurate?***
Y	» No issues were found under this question.
IN	» *613-1.9(a)(4):* The registered piping secondary containment is inaccurate. » *Note(s):* This Response does not include expired facility registrations, inaccurate facility information, unregistered tanks, or unregistered facilities; such violations should be captured under Question **REG_info**. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must correct the site registration online to reflect the piping secondary containment. » *Additional Action(s):* The inspector should note the specific inaccuracy with the piping secondary containment under Question **SC_pnov**, to include it in the list of registration discrepancies (in the NOV) that need to be corrected.
SC_pnov	***Which piping SC equipment should be noted in the NOV?***

SC_drc	Does the dispenser have a UDC/dispenser sump?
Y	» No issues were found under this question.
N **[SP2/SP5]**	» *613-2.1(b)(5):* The dispenser is not equipped with the required under-dispenser containment. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install under-dispenser containment within 60 days after the date of the NOV.
XT **[SP2/SP5]**	» Under-dispenser containment is not required because the dispenser system is not new.
NX	» *613-1.4(b):* The under-dispenser containment could not be accessed for inspection (e.g., locked/jammed dispenser, sump not designed to be accessed). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must submit documentation showing that the UDC is present and in good working order. » *Additional Action(s):* The inspector should conduct a follow-up inspection (where possible) to observe the UDC rather than rely on installation documentation or photographs from the facility. UDCs associated with SP2/SP5 UST systems must allow for visual inspections.
SC_dri	**Is the under-dispenser containment registration accurate?**
Y	» No issues were found under this question.
IN	» *613-1.9(a)(4):* The registered under-dispenser containment is inaccurate. » *Note(s):* This Response does not include expired facility registrations, inaccurate facility information, unregistered tanks, or unregistered facilities; such violations should be captured under Question **REG_info**. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must correct the site registration online to reflect the under-dispenser containment.
SC_val	**Is the equipment valid for the tank system?**
Y	» No issues were found under this question.
NVU **[SP2/SP3/SP5]**	» *613-2.1(b)(1)(ii)(e)(2) / 2.1(b)(1)(iii)(e)(2) / 2.1(b)(1)(iii)(e)(3):* The form of secondary containment is not valid for the tank (and there are no other valid forms of secondary containment in use). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to permanently close the tank system within 60 days after the date of the NOV.
NVP **[SP2/SP5]**	» *613-2.1(b)(2)(iii)(c)(2):* The piping is not double-walled. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to replace the piping (with double-walled piping) within 60 days after the date of the NOV.

SC_gwo	Is the equipment in good working order?
Y	» No issues were found under this question.
LIU **[SP2/SP3/SP5]**	» *613-1.12 / 2.1(b)(1)(ii)(e)(1) / 2.1(b)(1)(iii)(e)(1) / 2.1(c)(1)(ii) / 2.1(c)(1)(iii):* The tank secondary containment lacks integrity/is not liquid-tight. » *Note(s):* Evidence of integrity issues (for double-walled tank system components) includes: - presence of water (in the interstice); and - failed weekly interstitial monitoring results. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to permanently close the tank system within 60 days after the date of the NOV.
LIP	» *613-1.12 / 2.1(b)(2)(iii)(c)(1) / 2.1(c)(2)(iii):* The piping secondary containment – excluding any sumps – lacks integrity/is not liquid-tight. » *Note(s):* Evidence of integrity issues (for double-walled tank system components) includes: - presence of water (in the interstice); and - failed weekly interstitial monitoring results. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to either repair or replace the compromised piping (with double-walled piping) within 60 days after the date of the NOV.
LIC	» *613-1.12 / 2.1(b)(2)(iii)(c)(1) / 2.1(c)(2)(iii):* The (non-UDC) containment sump lacks integrity or is not liquid-tight on its sides, bottom, and/or penetrations. » *Note(s):* Evidence of integrity issues includes: - visible cracking; - degradation; and - failed periodic sump integrity monitoring/testing results (for sumps that are part of a SP2/SP5 UST system and used for piping interstitial monitoring), especially without adequate follow-up repairs. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to either repair or replace (and submit repair/replacement documentation for) the containment sump within 60 days after the date of the NOV.
WDC	» *613-1.12 / 2.1(b)(2)(iii)(c)(1) / 2.1(c)(2)(iii):* The (non-UDC) containment sump contains water and/or debris. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must clean the containment sump to be free of all liquids and debris, and submit a photograph showing the cleaned sump. » *Additional Action(s):* The presence of water within the sump is an unusual operating condition (i.e., a suspected spill) which the facility must investigate to determine how water is entering the sump and if it is escaping after being exposed to the potentially contaminated insides of the sump.
LID	» *613-1.12 / 2.1(b)(2)(iii)(c)(1) / 2.1(b)(5)(ii) / 2.1(c)(2)(iii):* The under-dispenser containment lacks integrity or is not liquid-tight on its sides, bottom, and/or penetrations. » *Note(s):* Evidence of integrity issues includes: - visible cracking; - degradation; and - failed periodic sump integrity monitoring/testing results (for UDCs that are part of a SP2/SP5 UST system and used for piping interstitial monitoring), especially without adequate follow-up repairs. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to either repair or replace (and submit repair/replacement documentation for) the UDC within 60 days after the date of the NOV.
WDD	» *613-1.12 / 2.1(b)(2)(iii)(c)(1) / 2.1(b)(5)(ii) / 2.1(c)(2)(iii):* The under-dispenser containment contains water and/or debris. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must clean the UDC to be free of all liquids and debris, and submit a photograph showing the cleaned UDC. » *Additional Action(s):* The presence of water within the UDC is an unusual operating condition (i.e., a suspected spill) which the facility must investigate to determine how water is entering the UDC and if it is escaping after being exposed to the potentially contaminated insides of the UDC.

Options

Double-Wall (DW) Construction

Double-wall construction refers to tanks/piping within another tank/piping. The primary component holds the petroleum (i.e., primary containment), while the outer component encapsulates the inner component. Between the two components is the interstitial space – also known as the annular space – into which spills (from the primary component) drain.

- Tank interstices are often accessible via tank-top ports and are monitored for leaks[151] either manually (using a pop-up indicator or a gauging stick) or electronically (with interstitial sensors connected to a tank monitoring console).
    - *Vacuum and pressurized interstices* are sealed and charged with either slightly negative or positive pressure, respectively: interstitial monitoring notes any change to the default pressure level.
    - *Dry interstices* are filled with air: interstitial monitoring notes the presence of liquids.
    - *Wet interstices* are filled with a brine solution: interstitial monitoring notes any change to the brine level.
- Piping interstices often lead to a containment sump – double-walled piping must be sloped such that spills to the interstice are conveyed (via a rubber piping boot) to the sump, where the leak collects until discovered. The sump is monitored for leaks[151] either manually or electronically (i.e., with a sensor placed at the lowest point of the sump).
    - To allow liquids to flow from the secondary piping to the sump, the boot must either be pulled back from the sump wall or have an open and unobstructed valve/port facing the floor of the sump. In the latter case, flexible piping often features a Schrader valve, while fiberglass piping can have either a Schrader valve or a hard-piped termination fitting with a threaded port.
        - Except during testing of the secondary piping, the valve core (poppet) inside the Schrader valve must be removed for leak detection.
        - Threaded ports may have test valves which can be left open for leak detection without removing the core; otherwise, the valve core must be removed.

The relative ease of installation, a small excavation footprint, and the near-immediate leak detection feedback, all make double-wall construction the industry standard for tank and piping secondary containment.

Facilities that utilize double-wall construction to comply with SC requirements must be able to prove the following regarding the design/construction of the DW component:

- For DW tanks, the secondary tank must sufficiently cover the primary tank and have integrity. Both qualities are crucial to catching spills from the primary tank and can be proven by complying with referenced standards (as applicable).
    - Tanks with dry interstices must also be sloped such that leaks are detectable from the monitoring port.
- For DW piping, the piping must be sloped such that leaks from the primary piping will flow to and pool in a location (i.e., containment sump) that is monitored periodically.

Installation records should include information on these.

[151] See **Interstitial Monitoring [INS]** on p. 115.

Issues

- **Single-Walled Tanks Retrofitted with Internal Linings with an Interstitial Space**

  Certain tank linings provide an interstitial space that can be monitored for leaks (e.g., ZCL Phoenix System, Petrofuse Four-Coat Tank Lining) and were commonly retrofitted to single-walled tanks in the late 1980s/early 1990s. Such lining system retrofits, however, does not classify the tank as double-walled: the completed lining is not a self-supporting structure (as it relies on the single-walled tank for structural support) and thus cannot be considered a tank wall.

- **Presence/Condition of the Piping Boot**

  Piping boots are not strictly required in the PBS regulations but are crucial for testing the integrity of both the sump and the double-walled piping (at the time of installation). The piping boot's condition often indicate tightness issues (i.e., how did petroleum reach the boot, how frequently has this happened) and/or incompatibility between the petroleum stored and the boot material. Inspectors who observe degraded boots should investigate the reason for the condition of the boot.

- **Connection Between the Sump and the Piping Boot**

  Contractors working on any equipment in the sump or testing the sump may, at times, make the mistake of leaving the sump sealed off from the interstice of the double-walled piping (especially when testing the sump's integrity). Operators should be alert to this possibility (particularly when doing rounds of the facility) and must rectify this situation immediately.

- **Piping in Rock Guards**

  Piping in rock guards are considered to be *in contact with the ground*[152], as the rock guard is considered to be a 'material' covering the piping. Any single-walled piping within a rock guard is not necessarily secondarily contained as rock guards are primarily installed for the purpose of convenience (when installing/reinstalling piping), not containment.

[152] Defined in 6 NYCRR subdivision 613-1.3(ak).

Containment Sumps and Under-Dispenser Containment (UDC)

Containment sumps are liquid-tight containers often placed around pumps, piping joints/connections, ancillary equipment, and other related components, with the purpose of containing spills during normal tank system operation and replacement of any equipment within. There are three general types:

- *Tank-top sumps* are located at the top of an underground tank and allow access to the submersible turbine pump (STP), solenoid/anti-siphon valves, operating valves, and any other equipment typically placed at the beginning (i.e., the most upstream point) of a piping run.
- *Transition sumps* are located at the middle of a piping run, often to allow access to connecting equipment between piping segments (and on rare occasion, pumps).
- *Dispenser sumps (or under-dispenser containment/UDCs)* are located beneath a dispenser, often to allow access to both the dispenser and any equipment connecting it to the buried piping (i.e., check/shear valves, risers, connectors, other transitional components beneath the dispenser, etc.)
    - UDCs are often rectangular/cuboid where tank-top and transition sumps are often cylindrical.
    - Unlike tank-top and transition sumps, dispensers sumps are required equipment under the PBS regulations[148] – UDCs must be installed when the dispenser and the equipment connecting the dispenser to the buried piping, are replaced or removed such that a dispenser sump can be installed.
        - Dispenser sumps are also necessary – regardless of the dispenser system being “new” or not – when piping interstitial monitoring is being performed AND spills to the secondary piping have the potential to flow towards the dispenser and not the tank (e.g., a UST system at a marina facility where the tank is at a higher elevation than the dispenser).

Containment sumps are typically single-walled, but they may also be double-walled with interstice types like those of DW tanks.

Double-walled piping is often sloped to convey spill to a containment sump for leak monitoring. As such, the sump must be kept free of liquids, debris, and other miscellaneous objects (e.g., oil filters) which may reduce its containment capacity.

Sumps must also be kept in good working order – to this end, the integrity of containment sumps used for piping interstitial monitoring, must be verified:

- at sump installation/reinstallation;
- within 30 days after sump repair; and
- periodically thereafter.

Periodic sump integrity monitoring/testing must meet the following requirements[138] (as applicable).

SP2 Containment Sumps	***Integrity Monitoring [INM]***	***Integrity Testing [INT][153]***	
		Low-Level Hydrostatic	***High-Level Hydrostatic***

Description	The interstice of a double-walled sump is monitored for leaks.
	
	Note: INM is acceptable only for DW sumps with a vacuum, pressurized, or wet interstice. The integrity of both sump walls cannot be verified by monitoring a dry interstice for leaks.
		This test method has two parts:
		• A leak is simulated in the sump to test the sump sensor's ability to trigger a positive shutdown.
		• Afterwards, the sump is filled with water to four inches above the activation point of the sensor (when placed at the lowest point of the sump).
		
		Notes:
		• This test method is acceptable only when the sump sensor is:
		  ○ tied to a tank monitoring console capable of shutting down the associated submersible turbine pump(s) (STP);
		  ○ a standalone sensor capable of shutting down all associated STP(s) or suction pump(s), and the facility is always staffed when the pumps are operational; or
		  ○ a mechanical float device (located in the UDC) capable of shutting the associated shear valve(s), and the facility is always staffed when the pumps are operational.
		• This test method must not be performed on sumps that are either newly installed or repaired.
			The sump is filled with water to four inches above the highest sump penetration.

Required Frequency and Recordkeeping	• *Perform and Record Results:* Annually • *Retain Records:* For the entire duration that the DW sump is monitored PLUS three years	• *Perform and Record Results:* Triennially • *Retain Records:* For three years or until the next test, whichever is later	

[153] Integrity testing must be performed in accordance with the manufacturer's testing requirements (if they exist); PEI RP 1200 (2019); or a code of practice developed by a nationally recognized association or independent testing laboratory and approved by the DEC. As of this writing, only low- and high-level hydrostatic testing are accepted methods for containment sump integrity testing, though additional sump testing methods will likely be listed on the National Work Group on Leak Detection Evaluations (NWGLDE) website.

Required Information	• Tank ID number
	• Date/time of monitoring
	• Monitoring results:
	  ○ Pass: no change in vacuum/pressure/brine level
	  ○ Fail: vacuum/pressure/ brine level change
	• Net change in vacuum/pressure/ brine level (if any)
	• Notes on what caused the level change
		• Tank ID number
		• Date/time of testing
		• Written documentation from the sump sensor manufacturer, specifying the minimum amount of liquid required to activate the sensor (typically one inch)
		• Water level measurements (in inches to the nearest 1/16”):
		  ○ Initial measurement
		  ▪ must be taken at least 15 minutes after filling sump to allow water to settle
		  ○ Final measurement
		  ▪ must be taken at least one hour (or an alternative test duration specified by the testing equipment manufacturer) after initial measurement
		  ○ Water level change (i.e., [final measurement] – [initial measurement])
		• Testing results:
		  ○ Pass – all of the following are true:
		  ▪ Flow is automatically shut off when sensor is activated
		  ▪ [Water level change] < 1/8”
		  ○ Fail – either of the following are true:
		  ▪ Flow is not automatically shut off when sensor is triggered
		  ▪ [Water level change] ≥ 1/8”
		  ○ Automatic Fail:
		  ▪ Sump has obvious integrity issues before test starts
		  ▪ Sump cannot be filled with water
		• Notes on condition of the sump/test boots/termination fittings before the test, and any liquids found in the sump before the test (i.e., was it all petroleum or all water, how much of each was found, etc.)
			• Tank ID number
			• Date of testing
			• Time sump was filled with water
			• Time of initial and final water level measurements
			• Water level measurements (in inches to the nearest 1/16”):
			  ○ Initial measurement
			  ▪ must be taken at least 15 minutes after filling sump to allow water to settle
			  ○ Final measurement
			  ▪ must be taken at least one hour (or an alternative test duration specified by the testing equipment manufacturer) after initial measurement
			  ○ Water level change (i.e., [final measurement] – [initial measurement])
			• Testing results:
			  ○ Pass: [water level change] < 1/8”
			  ○ Fail: [water level change] ≥ 1/8”
			  ○ Automatic Fail:
			  ▪ Sump has obvious integrity issues before test starts
			  ▪ Sump cannot be filled with water
			• Notes on condition of the sump/test boots/termination fittings before the test, and any liquids found in the sump before the test (i.e., was it all petroleum or all water, how much of each was found, etc.)

A leak is suspected when:

- water/petroleum is found in the interstice of a double-walled sump, and the presence of water/petroleum cannot be explained;
- the interstice of the double-walled sump loses integrity (per the integrity monitoring); or
- the results of the integrity testing indicate that the sump does not have integrity.

Any of these scenarios must be reported to the Spill Hotline within two hours after discovery.

Containment sumps – regardless of whether used for piping interstitial monitoring or required (UDC) for new dispensers – are also subject to annual walkthrough inspections[154].

Issues

- **Damaged Sumps**

  Inspectors should visually confirm that the containment sump has integrity – any holes, leaky perforations, or cracks signify a lack of tightness – but also that the operator did the same. As such, inspectors should ask operators for their assessment of the sump, especially when damaged.

- **(Evidence of the) Presence of Petroleum**

  Residue found in the containment sump typically indicates a prior spill (and subsequent removal of free product) which, when coupled with failed sump testing results, means that petroleum was likely released to the lands and/or waters of the State. The inspector should then verify that this (suspected) leak was reported to the Spill Hotline.

- **Foregoing Sump Integrity Monitoring/Testing Requirements**

  Facilities may forego the integrity monitoring/testing requirements for containment sumps used for Cat. 1/2 piping interstitial monitoring, by performing an additional LD method (e.g., line tightness testing). However, this supplementary method must be noted on the PBS registration (along with interstitial monitoring).

- **Integrity Monitoring/Testing Requirements for Sumps Containing Single- and Double-Walled Piping**

  Sumps may be exempted from integrity monitoring/testing requirements depending on whether the piping is single- or double-walled as it goes through the sump.

  Sumps with single-walled piping within them (e.g., secondary wall of a DW piping stops at the sump wall, or does not continue to the submersible turbine pump, the tank wall, or the shear valve) act as secondary containment for the single-walled portion of the piping; as such, integrity monitoring/testing is required for such sumps.

  However, sumps with double-walled piping within them (i.e., the piping is DW all the way to the submersible turbine pump, the tank wall, or the shear valve) do not act as secondary containment for the piping IF the interstice is closed to the sump; as such, the sump does not require integrity monitoring/testing.

- **Steel Under-Dispenser Containment**

  Some of the first under-dispenser containment products made commercially available in the 1990s was made from steel. These are not specifically required to have cathodic protection but are still susceptible to corrosion. Such UDCs are rarely used anymore, but inspectors that encounter them are advised to check for any signs of corrosion (that need to be addressed).

[154] See **Walkthrough Inspections** on p. 64.

Questions

SC_itm	***Is the containment sump being tested/monitored periodically?*** ***Note: containment sumps used for piping interstitial monitoring must be tested triennially or monitored annually (for DW sumps), for integrity.***
Y	» No issues were found under this question.
NT ***[SP2/SP5]***	» *613-2.2(f)(1)(ii):* Integrity testing is not being performed for the containment sump(s) used for piping interstitial monitoring. » *Note(s):* Testing records are the primary evidence that integrity testing is being performed; if testing is being performed, but either the testing is not being recorded or records are not being retained for at least three years or until the next test (whichever is later), Response **NRT** under Question **SC_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) an integrity test.
PT ***[SP2/SP5]***	» *613-2.2(f)(1)(ii):* Integrity testing is not being performed for the containment sump(s) used for piping interstitial monitoring, at least triennially. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) an integrity test.
NM ***[SP2/SP5]***	» *613-2.2(f)(1)(i):* Integrity monitoring is not being performed for the double-walled containment sump(s) used for piping interstitial monitoring. » *Note(s):* Monitoring records are the primary evidence that integrity monitoring is being performed; if monitoring is being performed, but either the monitoring is not being recorded or records are not being retained for as long as the double-walled catch basin is monitored (plus three years), Response **NRM** under Question **SC_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an integrity monitoring.
PM ***[SP2/SP5]***	» *613-2.2(f)(1)(i):* Integrity monitoring is not being performed for the double-walled containment sump(s) used for piping interstitial monitoring, at least annually. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an integrity monitoring.
XT ***[SP2/SP5]***	» Sump integrity testing/monitoring is not required because the sump is not used for piping interstitial monitoring. » *Note(s):* Sump integrity testing/monitoring also does not apply to exempt suction piping, regardless of whether the sump is used for piping interstitial monitoring.
XP ***[SP2/SP5]***	» Sump integrity testing/monitoring is not required because the double-walled piping is not connected to a sump.

SC_rec	*Are the testing/monitoring records being retained?* ***Note: testing records must be retained for 3 years or until the next test, whichever is later; monitoring records must be retained for as long as the DW sump is monitored, PLUS 3 years.***
Y	» No issues were found under this question.
NRT ***[SP2/SP5]***	» *613-2.2(f)(2):* Integrity testing is not being recorded, or records are not being retained for at least three years or until the next test (whichever is later). » *Note(s):* Testing records are the primary evidence that integrity testing is being performed; if the records are missing, testing is likely not being performed (and Response **NT** under Question **SC_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the results of the last integrity test, or perform (and submit the results of) an integrity test.
NRM ***[SP2/SP5]***	» *613-2.2(f)(2):* Integrity monitoring is not being recorded, or records are not being retained for as long as the double-walled containment sump is monitored (plus three years). » *Note(s):* Monitoring records are the primary evidence that integrity monitoring is being performed; if the records are missing, monitoring is likely not being performed (and Response **NM** under Question **SC_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records of the last integrity monitoring, or perform (and submit the records of) an integrity monitoring.

Vaults

A vault is a field-fabricated enclosure of impervious walls – commonly made of concrete – which completely surround a tank, much like a small room. Access to vaults are typically limited (if not entirely nonexistent) and/or considered confined space entry, rendering the enclosed tanks as inaccessible for a physical inspection of the tank exterior (i.e., the tank is in an *inaccessible area*, and thus considered to be underground).

Vaults used as secondary containment must be liquid-tight – drains, weep holes, and other penetrations that would allow petroleum to exit the vault defeat the purpose of having secondary containment.

Cut-Off Walls

Cut-off walls are vertical impermeable barriers (often made of concrete and/or clay) that surround the excavation zone. The walls are buried to a depth below the lowest local groundwater level at any given time to impede – or cut off – the movement of groundwater that may be contaminated if any part of the tank system fails. A monitoring well – placed in the area between the tank and cut-off wall – acts as the primary form of leak detection and is counted as interstitial monitoring. However, cut-off walls may only be used as secondary containment if the stored petroleum floats in water (i.e., its specific gravity is less than one).

There are some known issues with cut-off walls:

- They only partially meet the secondary containment requirements: they may prevent the lateral movement of any spills that escape of primary containment, but they do not prevent those spills from becoming releases as cut-off walls typically have no bottom. (Impervious underlayment is often used in conjunction with cut-off walls to completely contain such spills.)
- Verifying the condition of cut-off walls is also nigh impossible due to being buried.

Cut-off walls fell out of favor with the industry in the late 1980s/early 1990s for these reasons and double-wall construction became standard practice.

Impervious Underlayment

Impervious underlayment is an impermeable barrier (i.e., liner) that encapsulates the excavation zone (and extends at least a foot beyond all sides of the tank). The liner – often made of plastic – blocks the exit of any liquids within the excavation zone and is sloped in a way such that liquids pool into an area that is monitored for leaks by a monitoring well. The groundwater conditions required for impervious underlayment are the opposite of cut-off walls – groundwater levels must never reach the excavation zone. Surface waters must also be directed away from the excavation zone (often through concrete pads) to avoid being trapped by the underlayment and needing to be pumped out via the monitoring well.

Liners are not without drawbacks:

- The only way to prove the tightness of impervious underlayment – as installed on site – is to install an additional monitoring well outside the excavation area. Water levels (measured at the wells) are expected to be different if the liner is still in good working condition. This method, however, is not foolproof and often lead to false negatives that require complete re-excavation to repair the liner.
- The effectiveness of impervious underlayment as secondary containment also depends on how the liner is laid out into the excavation area. Certain layouts leave gaps that allow spills to seep into the lands and/or waters of the State (i.e., turn into a release); to prevent this, cut-off walls are often used together with impervious underlayment.

The difficulty of verifying the health of the liner, coupled with the necessity/low reliability of the additional monitoring well and/or cut-off walls, contribute to general disfavor towards impervious underlayment as a form of secondary containment.

Corrosion Protection

Purpose

Metal tank system components undergo corrosion caused by electrochemical oxidation of metals when in contact with certain media/substances – this results in degradation of the component material and compromising its integrity, which in turn, may result in spills and even releases. Corrosion protection equipment helps reduce and/or eliminate this risk of degradation for metal components.

Requirements

Corrosion protection generally refers to methods/equipment that protect metal tank system components (that routinely contain petroleum) from two types of corrosion:

- External corrosion occurs when the metal component is in contact with the ground (or any other electrolytes).
- Internal corrosion occurs when stored petroleum (i.e., aggressive fuel blends/additives) is not compatible with the component material.

Facilities must meet the following overall corrosion protection requirements[155] (as applicable).

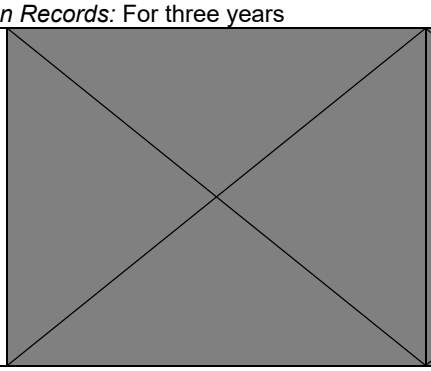
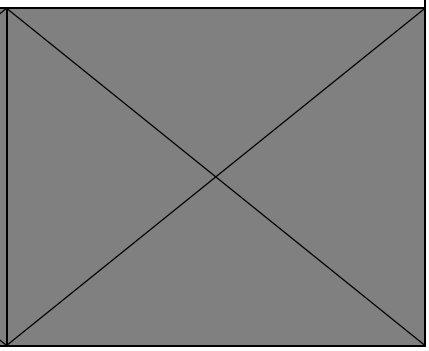
SP2 Corrosion Protection	***Requirements***
General	Metal tank system components must be: • installed in accordance with the manufacturer's instructions (and an acceptable code of practice[156]); and • protected from corrosion. Field-installed cathodic protection (CP) systems must: • be designed by a corrosion expert; • allow determination of current operating status (for impressed current systems); and • be installed in accordance with the manufacturer's instructions (and an acceptable code of practice[156]). Internal linings must have been installed in accordance with API RP 1631 (June 2001).
Periodic Equipment Inspections/ Testing	• Cathodic protection systems must be tested for operability[157] (by a qualified CP tester) at least annually. o Testing must be performed in accordance with an acceptable standard. • Impressed current systems must be inspected for continuous, proper operation[157] at least every 60 days. • Internal linings must be inspected for integrity[158] at least every five years. o Inspections must be performed in accordance with an acceptable standard.
Recordkeeping	*Retain:* • *Equipment Inspection/Testing Records:* o *CP Test Records:* For three years o *Impressed Current (IC) Inspection Records:* For three years o *Lining Inspection Report:* For five years • *Repair (and Post-Repair)[159] Records:* Until the tank system is permanently closed

DEC may require facilities to conduct additional inspections/testing if the facility has suspected leaks or inspections/testing that have not been performed. Facilities must complete this additional inspection/testing within ten days after receipt of the request, or DEC will conduct inspections/testing at the facility's expense.

[155] Corrosion protection requirements for SP2 tank systems are found in 6 NYCRR paragraphs 613-2.1(b)(1), (2) and (c)(1), (2).
[156] See **Installation** on p. 52.
[157] CP testing and impressed current inspection requirements for SP2 tank systems are found in 6 NYCRR paragraphs 613-2.2(i)(2), (3), respectively.
[158] Internal lining inspection requirements for SP2 tank systems are found in 6 NYCRR paragraph 613-2.2(i)(5).
[159] See **Repairs** on p. 53.

Conventional Tank and Piping Corrosion Protection

Steel (non-clad/jacketed) tanks in contact with the ground must utilize (at least) one of the following forms of corrosion protection and meet applicable requirements[160].

<table>
<tr><th>Corrosion Protection: SP2 Tanks</th><th>Cat. 1 Tank</th><th>Cat. 2 Tank[161]</th><th>Cat. 3 Tank[161]</th></tr>
<tr><td rowspan="2"><u>Sacrificial Anodes</u></td><td>• Any form of cathodic protection acceptable for Cat. 2 or 3 tanks
• Any form of cathodic protection if the tank meets certain criteria[162]
• Any form of cathodic protection if paired with internal lining</td><td>Designed, Fabricated, and Installed: In accordance with one of the following[163]:
• API RP 1632 (January 1983)
• sti-P3 (July 1983)
• ULC-S603.1-M1982 (1982)</td><td>Designed, Fabricated, and Installed: In accordance with one of the following[163]:
• NACE SP0285-2011 (2011)
• sti-P3 (September 2013)
• UL 1746 (January 2007)
• ULC-S603.1-11 (2011)</td></tr>
<tr><td colspan="3">• Test for CP Operability: Annually, in accordance with one of the following[163]:
○ NACE SP0285-2011 (2011)
○ NACE TM0101-2012 (2012)
○ STI R051 (January 2006)
• Retain CP Test Records: For three years</td></tr>
<tr><td rowspan="2"><u>Impressed Current (IC)</u></td><td>• Any form of cathodic protection acceptable for Cat. 2 or 3 tanks
• Any form of cathodic protection if the tank meets certain criteria[162]
• Any form of cathodic protection if paired with internal lining</td><td>Designed, Fabricated, and Installed: In accordance with API RP 1632 (January 1983)[163]</td><td>Designed, Fabricated, and Installed: In accordance with NACE SP0285-2011 (2011)[163]</td></tr>
<tr><td colspan="3">• Test for CP Operability: Annually, in accordance with one of the following[163]:
○ NACE SP0285-2011 (2011)
○ NACE TM0101-2012 (2012)
• Inspect for IC Operability: Every 60 days
• Retain CP Testing and IC Inspection Records: For three years</td></tr>
<tr><td><u>Internal Lining</u></td><td>• Installed: in accordance with API RP 1631 (June 2001)
• Inspect for Integrity: Every 60 days, in accordance with one of the following[163]:
○ API RP 1631 (June 2001)
○ KWA Recommended practice for Inspecting Buried Lined Steel Tanks Using a Video Camera (September 1999)
• Retain Lining Inspection Records: For five years</td><td>  </td><td>  </td></tr>
</table>

[160] Conventional corrosion protection standards/requirements for SP2 tanks are found in 6 NYCRR subparagraph 613-2.1(b)(1)(i) and clauses 613-2.1(b)(1)(ii)(*b*) & (iii)(*b*).

[161] Steel Cat. 2/3 tanks must be coated with a suitable dielectric material, especially when equipped with sacrificial anodes.

[162] This option is available only for steel Cat. 1 tanks that meet one of the following:

- An internal inspection was performed for the tank, and the tank was found to be structurally sound and free of corrosion holes, prior to CP system installation.
- The tank had been installed for less than 10 years, and either:
  - is monitored for leaks (at least weekly) using automatic tank gauging (ATG), vapor/groundwater monitoring, interstitial monitoring, or statistical inventory reconciliation (SIR); or
  - passed two tank tightness tests:
    - the first test must have been performed prior to CP system installation; and
    - the second test must have been performed within six months after CP system installation.

[163] Facilities may also comply with a code of practice developed by a nationally recognized association or independent testing laboratory and approved by the DEC.

Metal piping (and ancillary equipment) in contact with the ground must utilize one of the following forms of corrosion protection and meet applicable requirements[164].

<table>
<tr><th>Corrosion Protection: SP2 Piping</th><th colspan="2">Cat. 1 Piping</th><th>Cat. 2 Piping</th><th>Cat. 3 Piping[165]</th></tr>
<tr><td rowspan="2"><u>Sacrificial Anodes</u>[166]</td><td colspan="3">Designed, Constructed, and Installed:
• To provide a minimum of 30 years of protection
• With monitors to check on the adequacy of the CP system</td><td>Designed, Fabricated, and Installed:
In accordance with one of the following[163]:
• API RP 1632 (January 1996; revised 2002)
• NACE SP0169-2013 (2013)
• NACE SP0285-2011 (2011)
• STI R892 (January 2006)</td></tr>
<tr><td colspan="4">• Test for CP Operability: Annually, in accordance with one of the following[163]:
○ NACE SP0169-2013 (2013)
○ NACE SP0285-2011 (2011)
○ NACE TM0497-2012 (2012)
• Retain CP Test Records: For three years</td></tr>
<tr><td rowspan="2"><u>Impressed Current (IC)</u></td><td colspan="3">Designed, Constructed, and Installed:
• To provide a minimum of 30 years of protection
• With monitors to check on the adequacy of the CP system</td><td>Designed, Fabricated, and Installed:
In accordance with one of the following[163]:
• API RP 1632 (January 1996; revised 2002)
• NACE SP0169-2013 (2013)
• NACE SP0285-2011 (2011)
• STI R892 (January 2006)</td></tr>
<tr><td colspan="4">• Test for CP Operability: Annually, in accordance with one of the following[163]:
○ NACE SP0169-2013 (2013)
○ NACE SP0285-2011 (2011)
○ NACE TM0497-2012 (2012)
• Inspect for IC Operability: Every 60 days
• Retain CP Testing and IC Inspection Records: For three years</td></tr>
</table>

[164] Conventional corrosion protection standards/requirements for SP2 piping/ancillary equipment are found in 6 NYCRR subparagraph 613-2.1(b)(2)(i) and clauses 613-2.1(b)(2)(ii)(*b*) & (iii)(*b*).
[165] Metal Cat. 3 piping must be coated with a suitable dielectric material, especially when equipped with sacrificial anodes.
[166] Piping & ancillary equipment with sacrificial anodes must be electrically isolated from the tank and the dispenser.

Alternative Tank and Piping Corrosion Protection

Corrosion protection for (steel) field-constructed tanks (FCTs) with a design capacity greater than 50,000 gallons[167] as well as any associated (metal) piping may be challenging given conventional forms of cathodic protection. Such tanks/piping may then comply with the following alternative requirements[168] (as applicable) in lieu of their equivalent conventional counterparts.

<table>
<tr><th>Corrosion Protection: SP2 Tanks</th><th>Cat. 1 FCT (> 50k gal.)</th><th>Cat. 2 FCT (> 50k gal.)[161]</th><th>Cat. 3 FCT (> 50k gal.)[161]</th></tr>
<tr><td rowspan="2"><u>Sacrificial Anodes</u></td><td>Designed, Fabricated, and Installed:
In accordance with NACE SP0285-2011 (2011)[163]

Note: tanks that had been installed for more than ten years must have been inspected to ensure that it was structurally sound and free of corrosion holes, prior to CP system installation. The inspection must have been performed in accordance with ASTM G158 (1998)[163].</td><td>Designed, Fabricated, and Installed:
In accordance with NACE SP0285-2011 (2011)[163]</td><td></td></tr>
<tr><td colspan="3">• Test for CP Operability: Annually, in accordance with one of the following[163]:
○ NACE SP0285-2011 (2011)
○ NACE TM0101-2012 (2012)
○ STI R051 (January 2006)
• Retain CP Test Records: For three years</td></tr>
<tr><td rowspan="2"><u>Impressed Current (IC)</u></td><td>Designed, Fabricated, and Installed:
In accordance with NACE SP0285-2011 (2011)[163]

• Note: tanks that had been installed for more than ten years must have been inspected to ensure that it was structurally sound and free of corrosion holes, prior to CP system installation. The inspection must have been performed in accordance with ASTM G158 (1998)[163].</td><td>Designed, Fabricated, and Installed:
In accordance with NACE SP0285-2011 (2011)[163]</td><td></td></tr>
<tr><td colspan="3">• Test for CP Operability: Annually, in accordance with one of the following[163]:
○ NACE SP0285-2011 (2011)
○ NACE TM0101-2012 (2012)
• Inspect for IC Operability: Every 60 days
• Retain CP Testing and IC Inspection Records: For three years</td></tr>
</table>

[167] These tanks were previously deferred under 40 CFR Part 280.

[168] Alternative corrosion protection requirements for SP2 FCTs (> 50k gal.) and associated piping are found in 6 NYCRR subparagraphs 613-2.1(c)(1)(i), (ii), and subparagraphs 2.1(c)(2)(i), (ii), respectively.

Corrosion Protection: SP2 Piping	Cat. 1 Piping (associated with FCTs > 50k gal.)	Cat. 2 Piping (associated with FCTs > 50k gal.)	Cat. 3 Piping[165] (associated with FCTs > 50k gal.)
Sacrificial Anodes[166]	*Designed, Fabricated, and Installed:* In accordance with NACE SP0169-2013 (2013)[163]		
	• *Test for CP Operability:* Annually, in accordance with one of the following[163]: ○ NACE SP0169-2013 (2013) ○ NACE SP0285-2011 (2011) ○ NACE TM0497-2012 (2012) • *Retain CP Test Records:* For three years		
Impressed Current (IC)	*Designed, Fabricated, and Installed:* In accordance with NACE SP0169-2013 (2013)[163]		
	• *Test for CP Operability:* Annually, in accordance with one of the following[163]: ○ NACE SP0169-2013 (2013) ○ NACE SP0285-2011 (2011) ○ NACE TM0497-2012 (2012) • *Inspect for IC Operability:* Every 60 days • *Retain CP Testing and IC Inspection Records:* For three years		

Issues

- **Missing Test Ports**

  Permanent CP test ports are not strictly required on cathodically protected tank system components but are typically installed to facilitate testing; as such, the lack of test ports is not a violation, but is a strong indication that previous CP tests may not have been conducted correctly.

- **Tank System Components Made of Copper or Galvanized Steel (and Other Non-Steel Metals)**

  Modern tank systems rarely have copper or galvanized steel components, but inspectors will run into them occasionally. These components count as metal components that are not inherently corrosion-resistant and thus require cathodic protection (as with cathodically protected steel). Applicable CP test standards for such components may be slightly different, but the testing procedures/records will be largely identical.

- **Corroded Equipment in Containment Sumps**

  Inspectors may encounter corroded equipment (e.g., piping, submersible turbine pumps or STPs, line leak detectors) within containment sumps, often thought to be due to vapor intrusion from the tank storing ethanol-blended motor fuels. Inspectors are advised to note these on the inspection form but not cite them as violations, as long as the corroded equipment has not yet failed, and the enclosing sump is tight/not open to the lands and/or waters of the State.

- **Soil/Backfill in Sumps**

  Metal piping and ancillary equipment inside sumps are considered in contact with the ground when the sump is filled with soil or other backfill media (as is common downstate). Such components are susceptible to and must be protected from corrosion if in contact with earthen materials (e.g., soil, rocks, pea gravel, etc.). This can be done by booting the metal components, installing sacrificial anodes, or removing the earthen materials.

- **Failed Cathodic Protection Survey**

  A failed CP test does not, by itself, constitute a reportable spill; it does, however, mean that the tank system is noncompliant and must be either taken out of service to be repaired/replaced, or permanently closed.

Questions

CP_pre	*Is the required equipment present? Select all corrosion protection equipment that apply to the tank system, including those required, and any supplementary equipment. Record any inaccuracies with tank/piping type/CP or internal lining under INSP_comm (p. 2).*
Y	» No issues were found under this question.
NT	» *613-2.1(b)(1)(i)(b)(2) / 2.1(b)(1)(i)(b)(3) / 2.1(b)(1)(ii)(b) / 2.1(b)(1)(ii)(d) / 2.1(b)(1)(iii)(b) / 2.1(b)(1)(iii)(d) / 2.1(c)(1)(i) / 2.1(c)(1)(ii) / 2.1(c)(1)(iii):* The steel tank is not equipped with the required cathodic protection system (and is otherwise not protected from corrosion). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to permanently close the tank system within 60 days after the date of the NOV. » *Additional Action(s):* Lifting the AST and/or installing an impermeable barrier is not feasible when the tank has a double-bottom (with sand in the interstitial space); in such cases, the facility must (submit a plan to) either close the tank or install a CP system.
XPT	» Tank corrosion protection is not required because the tank is either made of a noncorrodible material or electrically isolated from the ground.
NP	» *613-2.1(b)(2)(i)(a) / 2.1(b)(2)(ii)(b) / 2.1(b)(2)(iii)(b) / 2.1(c)(2)(i) / 2.1(c)(2)(ii) / 2.1(c)(2)(iii):* The (metal) piping/ancillary equipment is not equipped with the required cathodic protection system (and is otherwise not protected from corrosion). » *Note(s):* This Response does not include any piping/ancillary equipment that are partly not protected from corrosion; such violations should be captured under Response **NA** instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to replace the unprotected piping/ancillary equipment (with a corresponding tank system component that is either made of a noncorrodible material or electrically isolated/cathodically protected) within 60 days after the date of the NOV.
NA	» *613-2.1(b)(2)(i)(a) / 2.1(b)(2)(ii)(b) / 2.1(b)(2)(iii)(b) / 2.1(c)(2)(i) / 2.1(c)(2)(ii) / 2.1(c)(2)(iii):* A portion of the piping/ancillary equipment is not protected from corrosion. » *Note(s):* This Response does not include any piping/ancillary equipment that are wholly not protected from corrosion; such violations should be captured under Response **NP** instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either: install a cathodic protection system for/electrically isolate the unprotected portion of the piping/ancillary equipment and submit documentation for the cathodically protected/electrically isolated equipment; or replace (and submit replacement documentation for) the piping/ancillary equipment with a corresponding tank system component that is either made of a noncorrodible material or electrically isolated/cathodically protected.
XPP	» Piping/ancillary equipment corrosion protection is not required because the tank system component is either made of a noncorrodible material or electrically isolated from the ground.
NTL [SP2/SP5]	» *613-2.1(b)(1)(i)(b)(1) / 2.1(b)(1)(i)(b)(3):* The steel, Cat. 1 UST is not equipped with either a cathodic protection system or an internal lining (and is otherwise not protected from corrosion). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to permanently close the tank system within 60 days after the date of the NOV.

CP_gwo	Is the equipment in good working order?
Y	» No issues were found under this question.
TMP	» *613-1.12 / 2.2(i)(1) / 2.2(i)(2)(ii):* The cathodic protection system is not providing adequate protection to the tank. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to either repair or replace the cathodic protection system within 90 days after the date of the NOV.
PMP	» *613-1.12 / 2.2(i)(1) / 2.2(i)(2)(ii):* The cathodic protection system is not providing adequate protection to the piping/ancillary equipment. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to either repair or replace the cathodic protection system within 90 days after the date of the NOV.
RO	» *613-1.12 / 2.2(i)(1):* The rectifier is not operational. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either repair or replace (and submit repair/replacement documentation for) the rectifier.
RP	» *613-1.12 / 2.2(i)(1):* The rectifier does not have continuous power (but is otherwise operational). » *Note(s):* This Response does not include any rectifier that has had occasional power interruptions (e.g., someone turned off the power); such violations should be captured under Response **RCO** instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either repair or reconfigure (and submit repair/reconfiguration documentation for) the impressed current system such that the rectifier has continuous power.
RCO	» *613-1.12 / 2.2(i)(1):* The rectifier clock indicates that the rectifier has not operated continuously (but is otherwise operational). » *Note(s):* This Response does not include any rectifier that has periodic power interruptions (e.g., due to how the CP system was designed); such violations should be captured under Response **RP** instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either repair or reconfigure (and submit repair/reconfiguration documentation for) the impressed current system such that the rectifier has continuous power.
LF	» *613-1.12 / 2.2(i)(5):* The lining no longer meets the original design specifications. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to either repair the internal lining or permanently close the tank system, within 60 days after the date of the NOV. » *Additional Action(s):* Lining inspections – particularly those performed in accordance with API RP 1631 (June 2001) – often include an assessment of the tank wall thickness (typically quantitative) to determine if the tank either is still structurally sound or still has sufficient thickness (compared to its original thickness) to continue service. The tank system must be closed if the tank wall either is too thin or already has holes (through corrosion).

CP_itm	*Is the equipment being tested/monitored periodically?*
Y	» No issues were found under this question.
NTT	» *613-2.2(i)(2):* Cathodic protection testing is not being performed for the tank. » *Note(s):* Test results are the primary evidence that cathodic protection testing is being performed; if testing is being performed, but test results are not being retained for at least three years, Response **NRT** under Question **CP_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a cathodic protection test.
PTT	» *613-2.2(i)(2)(i):* Cathodic protection testing is not being performed for the tank at least annually. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a cathodic protection test. » *Additional Action(s):* There is no need for the curative measure if the most recent annual cathodic protection test was performed but a previous one was not; this violation, however, should still be cited.
NPT	» *613-2.2(i)(2):* Cathodic protection testing is not being performed for the piping/ancillary equipment. » *Note(s):* Test results are the primary evidence that cathodic protection testing is being performed; if testing is being performed, but test results are not being retained for at least three years, Response **NRP** under Question **CP_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a cathodic protection test.
PPT	» *613-2.2(i)(2)(i):* Cathodic protection testing is not being performed for the piping/ancillary equipment at least annually. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a cathodic protection test. » *Additional Action(s):* There is no need for the curative measure if the most recent annual cathodic protection test was performed but a previous one was not; this violation, however, should still be cited.
NIC	» *613-2.2(i)(3):* Impressed current inspections are not being performed. » *Note(s):* Inspection records are the primary evidence that impressed current inspections are being performed; if inspections are being performed, but either the inspections are not being recorded or records are not being retained for at least three years, Response **NRI** under Question **CP_rec** should be selected instead. » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must perform (and submit the records of) an impressed current inspection.
PIC	» *613-2.2(i)(3):* Impressed current inspections are not being performed at least every 60 days. » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must perform (and submit the records of) an impressed current inspection. » *Additional Action(s):* There is no need for the curative measure if the most recent 60-day impressed current inspection was performed but a previous one was not; this violation, however, should still be cited.
NLI ***[SP2/SP5]***	» *613-2.2(i)(5):* Lining inspections are not being performed for the Cat. 1 UST. » *Note(s):* Inspection records are the primary evidence that lining inspections are being performed; if inspections are being performed, but either the inspections are not being recorded or records are not being retained for at least five years, Response **NRL** under Question **CP_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) a lining inspection.

PLI ***[SP2/SP5]***	» *613-2.2(i)(5):* Lining inspections are not being performed for the Cat. 1 UST at least every five years. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) a lining inspection. » *Additional Action(s):* There is no need for the curative measure if the most recent five-year lining inspection was performed but a previous one was not; this violation, however, should still be cited.
XTL ***[SP2/SP5]***	» Lining inspections are not required because the tank is not a SP2/SP5, Cat. 1 UST.
CP_rec	***Are the inspection records being retained?*** ***Note: CP test and impressed current inspection records must be retained for 3 years. Lining inspection records must be retained for 5 years.***
Y	» No issues were found under this question.
NRT	» *613-2.2(i)(4):* Cathodic protection test results are not being retained (for the tank) for at least three years. » *Note(s):* Test results are the primary evidence that cathodic protection testing is being performed; if the test results are missing, cathodic protection testing is likely not being performed (and Response **NTT** under Question **CP_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the results of the last test, or perform (and submit the results of) a cathodic protection test.
NRP	» *613-2.2(i)(4):* Cathodic protection test results are not being retained (for the piping) for at least three years. » *Note(s):* Test results are the primary evidence that cathodic protection testing is being performed; if the test results are missing, cathodic protection testing is likely not being performed (and Response **NTP** under Question **CP_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the results of the last test, or perform (and submit the results of) a cathodic protection test.
NRI	» *613-2.2(i)(4):* Impressed current inspections are not being recorded, or records are not being retained for at least three years. » *Note(s):* Inspection records are the primary evidence that impressed current inspections are being performed; if the records are missing, impressed current inspections are likely not being performed (and Response **NIC** under Question **CP_itm** should be selected instead). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must either submit the records of the last three impressed current inspections, or perform (and submit the records of) an impressed current inspection.
NRL ***[SP2/SP5]***	» *613-2.2(i)(5):* Lining inspections are not being recorded, or records are not being retained for at least five years. » *Note(s):* Inspection records are the primary evidence that lining inspections are being performed; if the records are missing, lining inspections are likely not being performed (and Response **NLI** under Question **CP_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records of the last lining inspection, or perform (and submit the records of) a lining inspection.

CP_com	Was the inspection complete/adequate?
Y	» No issues were found under this question.
TR	» *613-2.2(i)(2):* Not enough readings were taken (during the cathodic protection test) to accurately assess whether the cathodic protection system is providing adequate protection to the tank. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a cathodic protection test.
PR	» *613-2.2(i)(2):* Not enough readings were taken (during the cathodic protection test) to accurately assess whether the cathodic protection system is providing adequate protection to the piping/ancillary equipment. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a cathodic protection test.
ICI	» *613-2.2(i)(3):* The impressed current inspection records do not have all of the required information. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an impressed current inspection and include all required information.
LNA **[SP2/SP5]**	» *613-2.2(i)(5):* The lining inspection did not sufficiently determine if the lining still meets the original design specifications. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) a lining inspection.
CP_rat	**If repairs were made, are the repairs appropriate/adequate, and was the equipment tested after the repair?**
Y	» No issues were found under this question.
IN	» *613-2.2(j)(3) / 2.2(j)(4):* Repairs performed to either the cathodic protection system or a cathodically protected tank system component were either inappropriate or inadequate. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either: take the tank system out of service and submit a plan to properly repair the cathodic protection system/cathodically protected tank system component (and perform/submit the results of a cathodic protection test) within 90 calendar days after the date of the NOV; or submit a plan to permanently close the tank system within 60 days after the date of the NOV.
NT	» *613-2.2(i)(2)(i) / 2.2(j)(12):* A cathodic protection test was not performed, or was not performed within six months, after structural repairs to either the cathodic protection system or a cathodically protected tank system component. » *Note(s):* Cathodic protection systems not providing adequate protection to the repaired tank system component should be captured under Question **CP_gwo**, Response **TMP**/**PMP**; all other issues found with the cathodic protection test should be captured under this Response. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a cathodic protection test.

Options

Sacrificial Anodes

Galvanic corrosion is an electrochemical reaction that occurs during oxidation of metals in contact with an electrolytic environment (i.e., soil). This reaction can be exploited to protect metal equipment from corrosion, by attaching sacrificial anodes – blocks of metal (often zinc) with a more negative electric potential than the tank system component – that preferentially corrode, protecting the component in the process (hence the name "sacrificial" anode).

Sacrificial anodes are cathodic protection (CP) systems often used on tank system components where 95% of the component's surface area is coated or otherwise isolated from the ground. Components that either are too big (i.e., 5% of the surface area is too large to protect with anodes) or have unknown surface areas (i.e., components to be retrofitted) must have impressed current instead.

Sacrificial anodes also have a finite life – the tank system component will be protected from corrosion until the metal block is exhausted (the rate of which is affected by the surrounding soil conditions). To this end, the operability of sacrificial anodes – as a form of corrosion protection – must be tested (by a qualified CP tester):

- within six months after CP system installation/reinstallation;
- within six months after CP system repair; and
- annually thereafter.

Annual CP test records must be retained for (at least) three years and have the following information.

	CP Test – Sacrificial Anodes

SP2 Corrosion Protection Records:
 	
Required Information
	• Tank ID number
	• Date/time of CP test
	• A statement from the technician that the CP system was tested in accordance with an acceptable standard
	• Type of equipment used
	• An evaluation of the electrical continuity of the tank system
	• (Valid) CP readings for the following (as applicable; must be -850 mV or less):
	  ○ Tanks (at least three measurements; more, if necessary, per tank size):
	  ▪ The middle of the tank
	  ▪ Both ends of the tank (along the center line)
	  ○ Piping (at least one measurement per run)
	  ○ Ancillary equipment not isolated from the ground (at least one measurement)
	  ○ A remote soil location
	• A statement from the technician as to:
	  ○ Operating status of the CP system
	  ○ Tester's recommendations
	  ○ Any repairs to cathodically protected components conducted within the past year
	• Test results (i.e., pass/fail)
	• Technician's information:
	  ○ Qualifications/credentials
	  ○ Company name/address
	  ○ Name/signature
	• Any relevant notes regarding the test, weather/geologic conditions at the time of the test, and the tank system/facility (i.e., physical changes to the site since CP system installation that could impact monitoring), etc.

Metal tank system components with (nearly) depleted anodes (as indicated by a failed CP test) must then either be immediately replaced with new anodes or retrofitted with an impressed current system – as circumstances dictate – to protect against corrosion; however, if the component has already been corroded, the component must first be either repaired or replaced.

Issues

- **Cathodic Protection Survey Readings for Sacrificial Anodes**

  CP tests for sacrificial anodes must not be performed through frozen soil or through a concrete or asphalt pad, unless direct access is provided (e.g., by drilling holes).

Impressed Current (IC)

Impressed current systems maintain the optimum structure-to-soil potential between metal tank system components and the surrounding electrolyte (i.e., soil), by linking the component to an anode – made of high silicon-chromium cast iron or graphite – using impressed direct current (DC) often transformed by a rectifier from alternating current (AC). The current ensures that the electric potential of the anode is always more negative than that of the component, thereby protecting the component from corrosion.

IC systems provide versatility to the level of corrosion protection required for metal tank system components and thus are preferred over sacrificial anodes in soil conditions with high resistivity (i.e., dry/arid soil, sand, or dirt) and for components too big to be protected by sacrificial anodes.

These systems, however, require proper installation/calibration and a continuously powered rectifier. To this end, the operability of IC systems – as a form of corrosion protection – must be tested (by a qualified CP tester):

- within six months after CP system installation/reinstallation;
- within six months after CP system repair; and
- annually thereafter.

Impressed current systems must also be inspected every 60 days for continuous, proper operation.

Annual CP test and IC inspection records must be retained for (at least) three years and have the following information.

	CP Test – Impressed Current	***Impressed Current Inspection***

SP2 Corrosion Protection Records:
 	
Required Information
	• Tank ID number
	• Date/time of CP test
	• A statement from the technician that the CP system was tested in accordance with an acceptable standard
	• Type of equipment used
	• An evaluation of the electrical continuity of the tank system
	• (Valid) CP readings for the following (as applicable; must be -850 mV or less):
	  ○ Tanks (at least three measurements; more, if necessary, per tank size):
	  ▪ The middle of the tank
	  ▪ Both ends of the tank (along the center line)
	  ○ Piping (at least one measurement per run)
	  ○ Ancillary equipment not isolated from the ground (at least one measurement)
	  ○ A remote soil location
	• A report on 100-mV polarization decay (if any readings do not meet the -850-mV requirement)
	• Amperage readings (from the rectifier) at the time of the CP test
	• A statement from the technician as to:
	  ○ Operating status of the CP system
	  ○ Tester's recommendations
	  ○ Any repairs to cathodically protected components conducted within the past year
	• Test results (i.e., pass/fail)
	• Technician's information:
	  ○ Qualifications/credentials
	  ○ Company name/address
	  ○ Name/signature
	• Any relevant notes regarding the test, weather/geologic conditions at the time of the test, and the tank system/facility, etc.
		• Status of the rectifier (i.e., is the rectifier on)
		• Number of hours of operation since the last inspection
		  ○ Should be roughly equal to 1440 hours if inspections are performed every 60 days
		• Voltage and amperage readings at the time of:
		  ○ Most recent CP test
		  ○ IC inspection
		• A comparison of the two sets of amperage readings (the inspection readings must be within 20% of the readings from the most recent CP test)

Deviations from the IC inspection standards (i.e., 1440 hours of continuous operation, or ≤ 20% discrepancy between inspection/CP test amperage readings) and/or failed CP test results, may indicate a problem with the impressed current system and/or the cathodically protected tank system component, and should elicit either an explanation or an immediate action (i.e., repair, diagnostic CP test, taking the tank system out of service, etc.) from the facility.

Issues

- **Pauses in Rectifier Operation**

  Inspectors may find that the impressed current system lost power temporarily but should recognize that certain situations are beyond the facility's control (though still considered violations) and may not warrant penalties and/or a consent order. The owner/operator should note any losses of power in their records and include the reason(s) why the power was lost and for how long. Rectifiers should be on a circuit breaker separate from the facility's normal breakers to avoid these pauses in operation. Rectifier clocks – while not strictly required – are also recommended as they help facilities track these pauses (and respond to them as soon as possible).

Internal Lining

Internal lining refers to a coating of noncorrodible epoxy-based resins (or other equivalent polymers/coatings) bonded to the interior of a tank to form a protective impermeable layer against fuel blends/additives – often containing alcohol – that would normally corrode a steel tank from the inside.

While considered an acceptable of corrosion protection for steel, SP2, Cat. 1 underground tanks (which were seldom constructed of noncorrodible materials and/or fitted with cathodic protection at the time of installation), linings do not protect the tank from external corrosion; as such, it is highly recommended that lined tanks be equipped/retrofitted[169] with CP systems (i.e., sacrificial anodes or impressed current). Linings, in turn, must only be applied for compatibility purposes moving forward.

Internal linings cannot be fitted to tanks with holes and are prone to degradation over time. To this end, an internal structural assessment of the underground tank must be performed prior to lining installation, and lining integrity must be verified:

- within ten years after lining installation; and
- every five years thereafter.

Lining inspection reports must be retained for (at least) five years and have the following information.

	Internal Lining Inspections

SP2 Corrosion Protection Records:
 	
Required Information
	• Tank ID number
	• Date/time of lining inspection
	• A statement from the technician that the lining was tested in accordance with an acceptable standard
	• Type of equipment used
	• A statement from the technician the that lining has the following properties:
	  ○ Is (still) properly bonded to the tank
	  ○ Has no “holidays” (i.e., no discontinuities in the lining)
	  ○ Continues to meet the manufacturer’s Barcol hardness specifications
	  ○ Has a dry film thickness ≥ 100 mils
	• Assessment of the tank wall thickness (i.e., is the tank still structurally sound; should the tank system be closed)
	• Test results (i.e., pass/fail)
	• Technician’s information:
	  ○ Qualifications/credentials
	  ○ Company name/address
	  ○ Name/signature
	• Any relevant notes regarding the inspection, condition of the lining, and the tank system/facility, etc.

Lined tanks must be closed if the lining:

- is shown to have failed/no longer perform in accordance with the original specifications; and
- cannot be repaired in accordance with API RP 1631 (June 2001).

[169] Linings and cathodic protection systems each require a structural assessment of the tank prior to installation; if a lining was installed before the CP system, the structural assessment (for CP purposes) cannot be completed because the lining already covers the tank interior, and as such, the periodic lining inspection is (still) required. Lining inspections are not required, however, for Cat. 1 tanks equipped with cathodic protection prior to or at the same time as the lining installation.

Alternatively, the soil surrounding the tank can be analyzed to predict the mean time to corrosion failure (MTCF) for the tank in lieu of a structural assessment, prior to CP installation. (MTCF analyses use engineering algorithms to assess the structural integrity of the tank without the need for a lining inspection.) Lining inspections are not required for tanks found to be structurally sound (based on the MTCF) then equipped with CP either before or after the lining installation.

Color Code and (Tank) Label

Purpose

Color coding ports allows for quick (visual) identification of either the form of petroleum being stored in a specific tank, or the tank system equipment accessible from the surface. Doing so helps the person responsible for transfer activities avoid delivering a petroleum type to the wrong tank (i.e., cross-drops), which can result in off-spec petroleum, equipment failure/corrosion due to incompatibility between the tank and the petroleum, or even direct releases to the lands and/or waters of the State (if delivered to a monitoring well).

Tank labels provide a means of identifying a tank and its specifications quickly and without the need for other documentation (e.g., installation records, registration certificate); this is particularly useful during a delivery, a change-in-service, an emergency, or if the tank has been abandoned.

Requirements

Fill ports must be color coded[170] (e.g., painted, spray-painted, molded, etc.) in accordance with API RP 1637 (April 2020) to denote the petroleum type currently stored in the tank system. Other access ports (i.e., not for deliveries) must similarly be color coded to identify the equipment within. Coding schemes for some common petroleum types and tank system equipment are described below.

SP2 Color Coding	***Petroleum/Equipment Subtype***		***Background Color***	***Superimposed Text/Symbol***
Motor Fuels	*Race Fuel*	*E0*	Pink	Black ‘0’
		≤ E10		
	Gasoline/Ethanol Blends (≤ E10)	*Regular (87 Octane)*	White	
		Midgrade (88-89 Octane)	Blue	
		Premium (≥ 90 Octane)	Red	
	(Higher) Ethanol Blends	*E15*	Copper	Black ‘E15’
		> E15 and < E85		Black ‘EXX’ (where ‘XX’ denotes ethanol content)
		E85		Black ‘E85’
	Biodiesel (On-Road; ULSD)	*≤ B5*	Yellow	
		> B5 and < B99.9		Black ‘BXX’ (where ‘XX’ denotes biodiesel content)
	Biodiesel (Off-Road; dyed red)	*≤ B5*		Red ‘OFF’
		> B5 and < B99.9		Red ‘OFF’ and Black ‘BXX’ (where ‘XX’ denotes biodiesel content)
	Biodiesel	*B99.9/B100*	Light Blue	
	Renewable Diesel		Turquoise	
Heating Fuels/ Fuel Oils	*Kerosene*		Brown	
	No. 1 Fuel Oil		Dark Green	Black ‘1’
	No. 2 Fuel Oil			Black ‘2’
	Biofuel Oil			Black ‘BXX-X’ (where ‘XX’ denotes biodiesel content, and ‘X’ denotes fuel oil grade 1 or 2)
Miscellaneous	*Used Oil*		Light Gray	
	Monitoring Well[171]		White	Black triangle
	(Dual Point) Vapor Recovery		Orange	

Petroleum types not included in API RP 1637 (April 2020) must be identified at or near the fill port (e.g., with stenciled text, stickers, placards, etc.).

[170] Fill port color coding, tank label, and monitoring well requirements for SP2 tank systems are found in 6 NYCRR paragraphs 613-2.2(d)(1), (3).

[171] 6 NYCRR paragraph 613-2.2(d)(3): Monitoring wells must be sealed or capped to prevent liquids from entering from the surface.

Fill ports for Cat. 2/3 tanks must also have a tank label[170]. These refer to plastic/metal plates or stenciled information placed at or near the fill port and are primarily used by persons responsible for transfer activities: prior to the transfer, the person reads the label to ensure that the correct type/amount of petroleum will be made to the appropriate tank, thereby avoiding spills/overfills and cross-drops. Tank labels must have the following information.

	Cat. 1 Tank	Cat. 2 Tank	Cat. 3 Tank
SP2 Tank Label: ***Required Information***	No required details specified[172]	• Tank ID number • Tank design capacity (i.e., the volume of petroleum the tank is designed to hold) • Tank working capacity (i.e., the portion of the design capacity that can be filled before the overfill prevention device is activated) ○ If multiple overfill prevention devices are installed (whose working capacities differ), the lowest working capacity must be listed. • Type(s) of petroleum that can be stored in the tank	

Issues

- **Identifiability/Legibility**

  Fill port color coding/markings must be readily identifiable. Faded coloring and misshapen labels must be redone. Markings should also be extended to the surrounding crown/concrete to avoid using the wrong lid/cap on the wrong fill port. When text is used for petroleum types not included in API 1637, the text should be at least 3” in height and ½” in stroke.

  Information on the tank label must similarly be legible – the information is of no use to anyone if it cannot be read.

- **Compatibility/Durability of Fill Port Markings**

  There are no strict requirements regarding the type of material(s) used for either the color code or the tank label, but these should be able to withstand exposure to petroleum (vapors), inclement weather, and vehicle traffic.

- **Fill Port Manifolded to Multiple Tanks**

  If a fill port is manifolded to multiple tanks:

  - the different types of stored petroleum must be identified (e.g., with a placard) near the fill port, in lieu of color coding in accordance with API RP 1637 (April 2020); and
  - the tank labels must be placed adjacent to the fill port, but each label must be paired with the corresponding fill port (non-color code) identification such that the person responsible for transfer activities can easily find the label that goes with each tank.

- **Labels Compliant with the Former 6 NYCRR Part 614**

  The original iteration of the PBS regulations had broader, more detailed requirements for tank labels. Labels compliant with these older requirements need not be replaced, if the pertinent information on the label – tank ID, design/working capacities, type(s) of petroleum the tank can store – are still accurate.

- **Color Coding for Fill Ports with Coaxial Vapor Recovery**

  Fill ports for tanks storing gasoline – and any other gasoline blends – may be equipped coaxial vapor recovery: the transfer of gasoline and the removal of the displaced fumes are done through the same fill port, which increases the risk of cross-drops into the tank. As such, the fill port should feature an orange ring immediately surrounding the color coding for the stored gasoline (blend).

[172] Cat. 1 UST systems were not required to follow any tank labeling requirements to avoid retroactive imposition of then-new requirements.

Questions

CL_pre	***Is the required equipment present?***
Y	» No issues were found under this question.
NFC	» *613-2.2(d)(2):* The fill port is not color coded (or otherwise marked). » *Note(s):* Fill ports that are marked instead of being color coded accordingly should be captured under Question **CL_gwo**, Response **CIN**. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must properly color code (or mark) the fill port and submit a photograph showing the color coded/marked fill port.
XPF	» Fill port color coding/marking is not required because the tank does not have a fill port.
NWC	» *613-2.2(d)(3):* The monitoring wells are not color coded (or otherwise marked), or do not have (marked) lids. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must clearly identify the monitoring wells and submit a photograph showing the marked/color coded lids. » *Additional Action(s):* The facility as-built plan (if required) must also make note of all monitoring wells (and their locations) on site.
XPW	» Monitoring well color coding/marking is not required because the tank system does not have monitoring wells.
NL	» *613-2.2(d)(1):* A tank label is not present at (or near) each fill port associated with the tank. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must install a tank label and submit a photograph showing the fill port(s) with the new tank label.
XTL [SP2/SP3/SP5]	» Tank labels are not required because the tank is a SP2/SP5, Cat. 1 UST.
CL_gwo	***Is the equipment in good working order?***
Y	» No issues were found under this question.
CIN	» *613-1.12 / 2.2(d)(2):* The color coding/marking on the fill port are either unclear or indicative of something else (e.g., a different petroleum type or a monitoring well). » *Note(s):* This Response also includes any such ports with either faded/unidentifiable or inaccurate color coding/markings. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must properly color code (or mark) the fill port and submit a photograph showing the color coded/marked fill port.
WIM	» *613-1.12 / 2.2(d)(3):* The color coding/marking on the monitoring wells are either unclear or indicative of something else (e.g., a fill port). » *Note(s):* This Response also includes any such ports with either faded/unidentifiable or inaccurate color coding/markings. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must properly color code (or mark) the monitoring wells and submit a photograph showing the color coded/marked lids.
LIN	» *613-1.12 / 2.2(d)(1):* The tank label has either incomplete or inaccurate information. » *Note(s):* This Response also includes any faded/unidentifiable tank labels. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must rewrite or replace the tank label and submit a photograph showing the fill port with the rewritten/replaced tank label.
CL_mis	***Are there any other observed violations?***
MWS	» *613-2.2(d)(3):* The monitoring wells are not capped/secured (to prevent liquids from entering from the surface). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must cap/secure the monitoring wells and submit a photograph showing the capped/secured wells.

Fill Port Catch Basin

Purpose

Catch basins are meant to capture spills/overfills at the fill ports – one of the most common sources of spills – and prevent them from reaching the lands and/or waters of the State (i.e., becoming releases).

Requirements

Catch basins refer to containment specifically equipped around fill pipes to catch spills that occur during delivery.

Facilities must meet the following overall catch basin requirements[173] (as applicable).

SP2 Fill Port Catch Basin	***Requirements***
General	Fill port catch basins must be: • installed in accordance with the manufacturer's instructions (and an acceptable code of practice[174]); • able to prevent the release of petroleum when the transfer hose is detached from the fill pipe; • free of water, petroleum, debris, and other miscellaneous objects that may reduce its containment capacity; • expeditiously emptied of water, petroleum, and debris after deliveries.

Periodic Equipment Inspections/ Testing/ Monitoring	• The integrity[175] of catch basins must either be:
	  ○ monitored at least every 30 days (for double-walled catch basins); or
	  ○ tested at least every three years.
	  ▪ Testing must be performed in accordance with[176]:
	  ⊕ the manufacturer's requirements (if the manufacturer has developed such requirements); or
	  ⊕ PEI RP1200 (2019).
	• Catch basins are also subject to walkthrough inspections[177] performed every 30 days.

(Suspected) Spill Reporting	The following are considered suspected leaks that must be reported to the Spill Hotline within two hours after discovery[178]: • Unexplained presence of water/petroleum in the interstice of a double-walled catch basin • Failed catch basin integrity monitoring/testing results

Recordkeeping	*Retain:*
	• *Equipment Inspection/Testing/Monitoring Records:*
	  ○ *Integrity Monitoring Records:* For the entire duration that the DW catch basin is monitored PLUS three years
	  ○ *Integrity Testing Records:* For three years or until the next test, whichever is later
	  ○ *Walkthrough Inspection Records:* For three years
	• *Repair (and Post-Repair)[179] Records:* Until the tank system is permanently closed

DEC may require facilities to conduct additional inspections/testing/monitoring if the facility has suspected leaks or inspections/testing/monitoring that have not been performed. Facilities must complete this additional inspection/testing/monitoring within ten days after receipt of the request, or DEC will conduct inspections/testing/monitoring at the facility's expense.

Fill pipes for SP2 tanks must be equipped with catch basins, regardless of tank Category, except for those associated with tanks that receive 25 gallons or less during each transfer[180]. Catch basins are designed to contain overfills and excess petroleum from the delivery hose; as such, the catch basin must be kept free of liquids, debris, and other miscellaneous objects (e.g., tools) which may reduce its containment capacity.

[173] Catch basin requirements for SP2 tank systems are found in 6 NYCRR paragraph 613-2.1(b)(4).
[174] See **Installation** on p. 52.
[175] Integrity monitoring/testing requirements for SP2 catch basins are found in 6 NYCRR subdivision 613-2.2(f).
[176] Facilities may also comply with a code of practice developed by a nationally recognized association or independent testing laboratory and approved by the DEC.
[177] See **Walkthrough Inspections** on p. 64.
[178] See **Spills** on p. 460.
[179] See **Repairs** on p. 53.
[180] An example of such UST systems is one used to collect used oil at an automotive garage.

Catch basins must also be kept in good working order – to this end, the integrity of catch basins must be verified:

- at catch basin installation/reinstallation;
- within 30 days after catch basin repair; and
- periodically thereafter.

Periodic catch basin integrity monitoring/testing must meet the following requirements[175] (as applicable).

SP2 Catch Basins	***Integrity Monitoring [INM]***	***Integrity Testing [INT][181]***		
		Interstitial Vacuum	***Vacuum***	***Hydrostatic***
Description	The interstice of a double-walled catch basin is monitored for leaks. *Note:* INM is acceptable only for DW catch basins with a vacuum, pressurized, or wet interstice. The integrity of both sump walls cannot be verified by monitoring a dry interstice for leaks.	Partial vacuum is applied to the dry interstice of a double-walled catch basin. *Note:* interstitial vacuum testing is acceptable only for DW catch basins with a dry interstice.	Partial vacuum is applied to the catch basin.	The catch basin is filled with water to 1.5 inches of the top of the catch basin.
Required Frequency and Recordkeeping	• *Perform and Record Results:* Every 30 days[182] • *Retain Records:* For the entire duration that the DW catch basin is monitored PLUS three years	• *Perform and Record Results:* Triennially • *Retain Records:* For three years or until the next test, whichever is later		

[181] Integrity testing must be performed in accordance with the manufacturer's testing requirements (if they exist); PEI RP 1200 (2019); or a code of practice developed by a nationally recognized association or independent testing laboratory and approved by the DEC. As of this writing, only interstitial vacuum, vacuum, and hydrostatic testing are accepted methods for catch basin integrity testing, though additional catch basin testing methods will likely be listed on the National Work Group on Leak Detection Evaluations (NWGLDE) website.

[182] Integrity monitoring for catch basins may be performed prior to every delivery if deliveries are less frequent than every 30 days.

Required Information	• Tank ID number
	• Date/time of monitoring
	• Monitoring results:
	  ○ Pass: no change in vacuum/pressure/ brine level
	  ○ Fail: vacuum/pressure/ brine level change
	• Net change in vacuum/pressure/ brine level (if any)
	• Notes on what caused the level change, and if the catch basin is equipped for either a tank-top or a remote fill port
		• Tank ID number
		• Date of testing
		• Time vacuum was applied to catch basin interstice (i.e., initial vacuum level measurement) and final vacuum level measurement
		• Vacuum level measurements (in inH_2O):
		  ○ Initial measurement
		  ▪ must be equal to 15 inH_2O
		  ○ Final measurement
		  ▪ must be taken at least one minute after initial measurement
		• Testing results:
		  ○ Pass: [final measurement] ≥ 12 inH_2O
		  ○ Fail: [final measurement] < 12 inH_2O
		  ○ Automatic Fail:
		  ▪ Catch basin has obvious integrity issues before test starts
		  ▪ Interstice cannot be pressurized
		• Notes on condition of the catch basin/fill cap and adapter fittings before the test, how well the spill bucket fits around the fill pipe, and any fluids found in the interstice before the test (i.e., was it all petroleum or all water, how much of each was found, etc.)
			• Tank ID number
			• Date of testing
			• Time vacuum was applied to catch basin (i.e., initial vacuum level measurement) and final vacuum level measurement
			• Vacuum level measurements (in inH_2O):
			  ○ Initial measurement
			  ▪ must be equal to 30 inH_2O
			  ○ Final measurement
			  ▪ must be taken at least one minute after initial measurement
			• Testing results:
			  ○ Pass: [final measurement] ≥ 26 inH_2O
			  ○ Fail: [final measurement] < 26 inH_2O
			  ○ Automatic Fail:
			  ▪ Catch basin has obvious integrity issues before test starts
			  ▪ Catch basin cannot be pressurized
			• Notes on condition of the catch basin/fill cap and adapter fittings before the test, how well the spill bucket fits around the fill pipe, and any fluids found in the interstice before the test (i.e., was it all petroleum or all water, how much of each was found, etc.)
				• Tank ID number
				• Date of testing
				• Time catch basin was filled with water
				• Time of initial and final water level measurements
				• Water level measurements (in inches to the nearest 1/16”):
				  ○ Initial measurement
				  ▪ must be taken at least five minutes after filling catch basin to allow water to settle
				  ○ Final measurement
				  ▪ must be taken at least one hour (or an alternative test duration specified by the testing equipment manufacturer) after initial measurement
				  ○ Water level change (i.e., [final measurement] – [initial measurement])
				• Testing results:
				  ○ Pass: [water level change] < 1/8”
				  ○ Fail: [water level change] ≥ 1/8”
				  ○ Automatic Fail:
				  ▪ Catch basin has obvious integrity issues before test starts
				  ▪ Catch basin cannot be filled with water
				• Notes on condition of the catch basin/fill cap and adapter fittings/drain valve before the test, how well the catch basin fills around the fill pipe, and any liquids found in the catch basin before the test (i.e., was it all petroleum or all water, how much of each was found, etc.)

A leak is suspected when:

- water/petroleum is found in the interstice of a double-walled catch basin, and the presence of water/petroleum cannot be explained;
- the interstice of the double-walled catch basin loses integrity (per the integrity monitoring); or
- the results of integrity testing indicate that the catch basin does not have integrity.

Any of these scenarios must be reported to the Spill Hotline within two hours after discovery.

Catch basins – regardless of whether required for the tank system – are also subject to 30-day walkthrough inspections[183].

Issues

- **Obstructed Drain Valves and Damaged Catch Basins**

  Some fill port catch basins have drain valves that lead to the tank. Drain valves must not have any obstructions that prohibit the valve from fully closing, primarily to prevent water/debris/sediment from entering the tank. Obstructed drain valves prevent full spill containment and are known to circumvent ball float valves – used as overfill prevention[184] – during delivery by acting as a vent after the ball float is activated. Damaged catch basins must also be addressed for the same reason.

  Inspectors should visually confirm that the catch basin has integrity – any holes, leaky perforations, or cracks signify a lack of tightness – but also that the operator did the same. As such, inspectors should ask operators for their assessment of the catch basin, especially when damaged.

- **Loose Crown**

  Repeated snow plowing may damage the crown of a catch basin, creating an entry point for precipitation. This compromises the integrity of the spill bucket and prevents it from fully containing any spills/overfills.

- **Removing Spills from Catch Basins**

  Operators may need to report spills[178] within the catch basin, but how they must remove spills varies depending on the composition of the liquid, which operators must verify before removal:

  - Spills of pure petroleum (from a delivery made to that tank) may be drained directly into the tank using the drain valve (if so equipped).
  - Spills that have water and/or debris/sediment must be removed from the catch basin manually (e.g., with a hand pump and bucket).
    - Water accumulation inside a tank can cause rusting (for metal tank system components), phase separation (particularly for gasoline/ethanol blends) or biofouling (for biofuel blends); debris/sediment can lead to clogging and damage to internal components.

[183] See **Walkthrough Inspections** on p. 64.
[184] See **Ball Float Valve (BFV)** on p. 187.

Questions

CB_pre	***Is the required equipment present?***
Y	» No issues were found under this question.
N [SP2/SP5]	» *613-2.1(b)(4):* The fill port is not equipped with the required catch basin. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install a catch basin within 60 days after the date of the NOV.
XP [SP2/SP5]	» A catch basin is not required because the UST system receives 25 gallons or less during each delivery.
NX	» *613-1.4(b):* The catch basin could not be accessed for inspection (e.g., locked/jammed/blocked fill port cover). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must submit documentation showing that the spill bucket is present and in good working order. » *Additional Action(s):* The inspector should conduct a follow-up inspection (where possible) to observe the catch basin rather than rely on installation documentation or photographs from the facility. Catch basins associated with SP2/SP5 UST systems must allow for visual inspections.
CB_gwo	***Is the equipment in good working order?***
Y	» No issues were found under this question.
LI	» *613-1.12 / 2.1(b)(4):* The catch basin lacks integrity or is not liquid-tight on its sides and/or bottom. » *Note(s):* Evidence of integrity issues includes: - visible cracking; - degradation; and - failed periodic catch basin integrity monitoring/testing results (for catch basins that are part of a SP2/SP5 UST system) without adequate follow-up repairs. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to either repair or replace (and submit repair/replacement documentation for) the catch basin within 60 days after the date of the NOV. » *Additional Action(s):* A ball float valve is likely inoperable if the spill bucket either lacks integrity or is not liquid-tight on its sides or bottom (see Question **OP_gwo**, Response **CB**).
WD	» *613-1.12 / 2.1(b)(4):* The catch basin contains water and/or debris. » *Note(s):* Liquids and debris limit the catch basin's containment volume, obscure possible leaks, and may also interfere with sensors. The interstice of double-walled spill buckets should also be clear of liquid and debris. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must clean the catch basin to be free of all liquids and debris, and submit a photograph showing the cleaned catch basin. » *Additional Action(s):* The presence of water within the interstice of a double-walled catch basin is an unusual operating condition (i.e., a suspected spill) which the facility must investigate to determine how water is entering the interstice and if it is escaping after being exposed to the potentially contaminated insides of the interstice.

CB_itm	***Is the catch basin being tested/monitored periodically?*** ***Note: catch basins must be tested triennially or monitored every 30 days (for DW catch basins), for integrity.***
Y	» No issues were found under this question.
NT ***[SP2/SP5]***	» *613-2.2(f)(1)(ii):* Integrity testing is not being performed for the catch basin. » *Note(s):* Testing records are the primary evidence that integrity testing is being performed; if testing is being performed, but either the testing is not being recorded or records are not being retained for at least three years or until the next test (whichever is later), Response **NRT** under Question **CB_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) an integrity test.
PT ***[SP2/SP5]***	» *613-2.2(f)(1)(ii):* Integrity testing is not being performed for the catch basin at least triennially. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) an integrity test.
NM ***[SP2/SP5]***	» *613-2.2(f)(1)(i):* Integrity monitoring is not being performed for the double-walled catch basin. » *Note(s):* Monitoring records are the primary evidence that integrity monitoring is being performed; if monitoring is being performed, but either the monitoring is not being recorded or records are not being retained for as long as the double-walled catch basin is monitored (plus three years), Response **NRM** under Question **CB_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an integrity monitoring.
PM ***[SP2/SP5]***	» *613-2.2(f)(1)(i):* Integrity monitoring is not being performed for the double-walled catch basin at least every 30 days. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an integrity monitoring.
CB_rec	***Are the testing/monitoring records being retained?*** ***Note: testing records must be retained for 3 years or until the next test, whichever is later; monitoring records must be retained for as long as the DW catch basin is monitored, PLUS 3 years.***
Y	» No issues were found under this question.
NRT ***[SP2/SP5]***	» *613-2.2(f)(2):* Integrity testing is not being recorded, or records are not being retained for at least three years or until the next test (whichever is later). » *Note(s):* Testing records are the primary evidence that integrity testing is being performed; if the records are missing, testing is likely not being performed (and Response **NT** under Question **CB_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the results of the last integrity test, or perform (and submit the results of) an integrity test.
NRM ***[SP2/SP5]***	» *613-2.2(f)(2):* Integrity monitoring is not being recorded, or records are not being retained for as long as the double-walled catch basin is monitored (plus three years). » *Note(s):* Monitoring records are the primary evidence that integrity monitoring is being performed; if the records are missing, monitoring is likely not being performed (and Response **NM** under Question **CB_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records of the last integrity monitoring, or perform (and submit the records of) an integrity monitoring.

Overfill Prevention

Purpose

Overfill prevention devices are installed on tank systems such that the person responsible for the delivery knows when to stop the transfer; this helps reduce the risk of overfills, which comprise a large fraction of preventable spills.

Requirements

Overfill prevention (OP) generally refers to equipment designed to prevent the overfilling of a tank during a delivery. Facilities must meet the following overall overfill prevention requirements[185] (as applicable).

SP2 Overfill Prevention	***Requirements***
General	OP equipment must be: • installed in accordance with the manufacturer's instructions (and an acceptable code of practice[186]); • able to prevent overfills by either shutting off/restricting flow into the tank or alerting the person responsible for transfer activities, when the tank is filled to its working capacity[187]; and • appropriate for the type of delivery made to the tank system and all other tank system equipment installed.

Periodic Equipment Inspections	OP equipment must be inspected for operability[188] at least every three years.
	• Inspections must be performed in accordance with[189]:
	  ○ the manufacturer's instructions; or
	  ○ PEI RP1200 (2019).
	• Inspections must verify that OP equipment:
	  ○ is installed properly;
	  ○ is in good working order; and
	  ○ activates at the correct/appropriate height (per the tank working capacity).

Recordkeeping	*Retain:* • *OP Equipment Inspection Records:* For three years or until the next inspection, whichever is later • *Repair (and Post-Repair)[190] Records:* Until the tank system is permanently closed

DEC may require facilities to conduct additional inspections if the facility has suspected leaks or inspections that have not been performed. Facilities must complete this additional inspection within ten days after receipt of the request, or DEC will conduct inspections at the facility's expense.

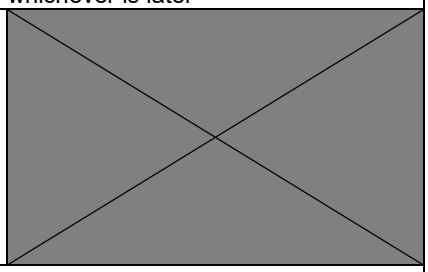
[185] Overfill prevention requirements for SP2 tank systems are found in 6 NYCRR paragraph 613-2.1(b)(3).
[186] See **Installation** on p. 52.
[187] 6 NYCRR subdivision 613-1.3(cd): *Working capacity* means the portion of the design capacity of a tank that may be filled before engaging the overfill prevention device, reduced by an allowance for freeboard and petroleum expansion.
[188] Inspection requirements for SP2 overfill prevention equipment are found in 6 NYCRR subdivision 613-2.2(e).
[189] Facilities may also comply with a code of practice developed by a nationally recognized association or independent testing laboratory and approved by the DEC.
[190] See **Repairs** on p. 53.

Tank Overfill Prevention

Tanks must utilize one (or more) of the following forms of overfill prevention and meet applicable requirements[185], except for those that receive 25 gallons or less during each transfer[191].

Overfill Prevention: SP2 Tanks	***Cat. 1 Tank***	***Cat. 2 Tank***	***Cat. 3 Tank***

Automatic Shutoff Valve (ASV)	• *Acceptable for:*
	  ○ Gravity-head deliveries
	  ○ Pressurized deliveries (if designed to handle higher pressures/flow rates)
	• *Designed, Constructed, and Installed:* To automatically shut off flow into the tank:
	  ○ when the tank is no more than 95% full; or
	  ○ so that none of the fittings located on top of the tank are exposed to petroleum (due to overfilling)
	• *Inspect for OP Operability:* Every three years
	• *Retain OP Inspection Records:* For three years or until the next inspection, whichever is later		

Ball Float Valve (BFV)[192]	• *Acceptable for:* Gravity-head deliveries
	• *Designed, Constructed, and Installed:* To restrict off flow into the tank:
	  ○ when the tank is no more than 90% full (and alert the person responsible for transfer activities to stop the delivery); or
	  ○ 30 minutes prior to overfilling so that none of the fittings located on top of the tank are exposed to petroleum (due to overfilling)
	• *Inspect for OP Operability:* Every three years
	• *Retain OP Inspection Records:* For three years or until the next inspection, whichever is later
			

High-Level Alarm (HLA)	• *Acceptable for:*
	  ○ Gravity-head deliveries
	  ○ Pressurized deliveries
	• *Designed, Constructed, and Installed:* To alert the person responsible for transfer activities to stop the delivery when:
	  ○ when the tank is no more than 90% full; or
	  ○ one minute before overfilling so that none of the fittings located on top of the tank are exposed to petroleum (due to overfilling)
	• *Inspect for OP Operability:* Every three years
	• *Retain OP Inspection Records:* For three years or until the next inspection, whichever is later		

Issues

- **Installation at the Correct/Appropriate Height**

  Inspectors who encounter tanks with OP devices not set to activate at default working capacities (i.e., 90 or 95% of the design capacity, as applicable) should verify that the OP equipment is installed correctly, by reviewing either the installation records or the delivery records. Installation records should include calculations that justify the alternative actuation height, while delivery records should reveal any overfills (or deliveries that result in exceedance of the working capacity) – large and/or frequent overfills warrant discussion with the operator to verify if the actuation height is appropriate (or needs lowering).

  Actuation height can also be verified through the most recent results of the triennial OP equipment inspections or the tank monitoring console (or any standalone consoles for high-level alarms). Any recent repair or servicing records (for the OP device) may also specify the actuation height.

[191] An example of such UST systems is one used to collect used oil at an automotive garage.
[192] Ball float valves may not be installed, and existing ball float valves may not be repaired/replaced, to comply with SP2 OP requirements after October 13, 2015.

Questions

OP_rc	***OP equipment: all OP equipment that apply to the tank – including those required and any supplementary equipment installed – should be selected.***
HLA	» High Level Alarm
ASV	» Automatic Shut-Off Valve
BFV	» Float Vent Valve
O	» Other
N	» *613-2.1(b)(3):* The tank is not equipped with the required overfill prevention equipment. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid overfill prevention device. » *Additional Action(s):* New ball float valves may not be installed for a SP2/SP5 UST after October 13, 2015.
XP [SP2/SP3/SP5]	» Overfill prevention is not required because the UST system receives 25 gallons or less during each delivery.
NX	» *613-1.4(b):* The overfill prevention equipment could not be accessed for inspection (e.g., locked/blocked fill port, high-level alarm console in a locked room, vent pipe extractor tee either fused or buried). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must submit documentation that an overfill prevention device is present and in good working order/properly installed. » *Additional Action(s):* The inspector should conduct a follow-up inspection (where possible) to observe the overfill prevention equipment rather than rely on installation documentation or photographs from the facility.
OP_ri	***Is the registered OP equipment accurate?***
Y	» No issues were found under this question.
IN	» *613-1.9(a)(4):* The registered overfill prevention equipment is inaccurate. » *Note(s):* This Response does not include expired facility registrations, inaccurate facility information, unregistered tanks, or unregistered facilities; such violations should be captured under Question **REG_info**. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must correct the site registration online to reflect the overfill prevention equipment. » *Additional Action(s):* The inspector should note the specific inaccuracy with the overfill prevention under Question **OP_nov**, to include it in the list of registration discrepancies (in the NOV) that need to be corrected.
OP_nov	***Which OP equipment should be noted in the NOV?***

OP_val	*Is the equipment valid for the tank system?*
Y	» No issues were found under this question.
BF3 ***[SP2/SP5]***	» *613-2.1(b)(3)(iii):* A ball float valve was installed for the UST after October 13, 2015 (and there are no other valid overfill prevention equipment in use). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid overfill prevention device. » *Additional Action(s):* Ball float valves may be rendered inoperable by certain tank system components. The overfill prevention device installed (as part of the curative measure) must be compatible with the ball float valve if the facility elects to keep it; otherwise, the ball float valve may need to be uninstalled.
SLB	» The ball float valve is not required for the tank or supplements a different OP device that is being used to meet overfill prevention requirements. » *Note(s):* Ball float valves may be rendered inoperable by certain tank system components, or the type of deliveries made to the tank; in such cases, the ball float valve may need to be uninstalled.
LGU ***[SP2/SP5]***	» *613-2.1(b)(3)(i):* The level gauge is not a valid overfill prevention device for the UST (and there are no other valid overfill prevention equipment in use). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid overfill prevention device.
SLG	» The level gauge is not required for the tank or supplements a different OP device that is being used to meet overfill prevention requirements.
VW	» *613-2.1(b)(3)(i):* The vent whistle is not a valid overfill prevention device for the tank (and there are no other valid overfill prevention equipment in use). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid overfill prevention device.
SVW	» The vent whistle is not required for the tank or supplements a different OP device that is being used to meet overfill prevention requirements.
OP_gwo	***Is the equipment in good working order?***
Y	» No issues were found under this question.
O	» *613-1.12 / 2.1(b)(3)(i):* The overfill prevention equipment is inoperable. » *Note(s):* The overfill prevention equipment is considered inoperable if any of the following is true: - the automatic shutoff valve has been tampered with/is obstructed; - the automatic shutoff valve is not oriented properly (e.g., the flapper does not open towards the far end of the tank, the valve is upside down); - the high-level alarm test button/function does not work; - the equipment is corroded/degraded; - the equipment is inaccurate/uncalibrated (such that the person responsible for the transfer cannot tell when to stop the flow of petroleum); - the device does not activate when the tank is filled to its working capacity; - the tank has been repeatedly filled beyond its working capacity, per the delivery records; or - the overfill prevention equipment failed its triennial inspection (for SP2/SP5 UST systems) and adequate follow-up repairs were not conducted. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must repair or replace (and submit repair/replacement documentation for) the overfill prevention equipment. » *Additional Action(s):* New ball float valves may not be installed, nor existing ball float valves repaired/replaced, for a SP2/SP5 UST after October 13, 2015.

CB ***[SP2/SP3/SP5]***	» *613-1.12 / 2.1(b)(3)(i)(b) / 2.1(b)(3)(i)(c):* The ball float valve is rendered inoperable by either a broken/obstructed catch basin drain valve or a damaged catch basin. » *Note(s):* This Response does not include ball float valves incompatible with either other tank system components or the type of deliveries made to the tank; such violations should be captured under Response BFV instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit a plan to repair/replace (and submit repair/replacement documentation for) the catch basin within 60 days after the date of the NOV, and/or install/utilize (and submit documentation of) a valid overfill prevention device.
BFV	» *613-1.12 / 2.1(b)(3)(i) / 2.1(b)(3)(ii):* The ball float valve is rendered inoperable by either another tank system component or the type of deliveries made to the tank. » *Note(s):* Ball float valves should not be used with: - automatic shutoff valves when the ball float valve activates first; - suction piping (i.e., suction pumps/air eliminators); - coaxial Stage I vapor recovery; - additional tank-top openings (e.g., fill ports, gauging ports, dual-point Stage I vapor recovery ports, etc.) without their own "trap-door" devices (e.g., check valves) or ball float valves; or - tank systems that receive pressurized deliveries. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either address the equipment incompatibility, or install/utilize (and submit documentation of) a valid overfill prevention device. » *Additional Action(s):* Addressing the equipment compatibility may not always be feasible/practical, in which case, the facility may have to utilize either an automatic shutoff valve or a high-level alarm.
ASV	» *613-1.12 / 2.1(b)(3)(i) / 2.1(b)(3)(ii):* The automatic shutoff valve is rendered inoperable by either another tank system component or the type of deliveries made to the tank. » *Note(s):* Automatic shutoff valves should not be used with: - ball float valves when the automatic shutoff valve activates second; or - tank systems that receive pressurized/gravity head deliveries (i.e., specific delivery types require certain designs). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either address the equipment incompatibility, or install/utilize (and submit documentation of) a valid overfill prevention device. » *Additional Action(s):* Addressing the equipment compatibility may not always be feasible/practical, in which case, the facility may have to utilize a high-level alarm.
AV	» *613-1.12 / 2.1(b)(3)(i)(b) / 2.1(b)(3)(i)(d):* The high-level alarm is not audible/visible (during typical weather/working conditions) from every fill port associated with the tank. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must repair or replace (and submit repair/replacement documentation for) the high-level alarm.
LGR	» *613-1.12:* The level gauge cannot be conveniently read from every fill port associated with the tank. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either relocate (and submit installation documentation for) the level gauge or install/utilize (and submit documentation of) a valid overfill prevention device.
ACL	» *613-1.12 / 2.1(b)(3)(i):* The overfill prevention equipment is not set to activate at the appropriate level. » *Note(s):* This Response does not include overfill prevention equipment that do not activate (even when set at the appropriate level); such violations should be captured under Response **O** instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must reset the overfill prevention device to activate at an appropriate level and submit documentation justifying the new actuation height/working capacity.

OP_itm	Is the equipment being inspected periodically?
Y	» No issues were found under this question.
NI [SP2/SP5]	» *613-2.2(e)(1):* Overfill prevention inspections are not being performed. » *Note(s):* Inspection records are the primary evidence that overfill prevention inspections are being performed; if inspections are being performed, but either the inspections are not being recorded or records are not being retained for at least three years or until the next test (whichever is later), Response **NR** under Question **OP_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an overfill prevention inspection.
PI [SP2/SP5]	» *613-2.2(e)(1):* Overfill prevention inspections are not being performed at least triennially. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an overfill prevention inspection.
OP_rec	**Are the inspection records being retained?** ***Note: records must be retained for 3 years or until the next inspection, whichever is later.***
Y	» No issues were found under this question.
NR [SP2/SP5]	» *613-2.2(e)(3):* Overfill prevention inspections are not being recorded, or records are not being retained for at least three years or until the next test (whichever is later). » *Note(s):* Inspection records are the primary evidence that overfill prevention inspections are being performed; if the records are missing, inspections are likely not being performed (and Response **NI** under Question **OP_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records of the last overfill prevention inspection, or perform (and submit the records of) an overfill prevention inspection.
OP_com	**Was the inspection complete/adequate?**
Y	» No issues were found under this question.
CL [SP2/SP5]	» *613-2.2(e)(1)(i):* The actuation height was not verified (as being appropriate) as part of the overfill prevention inspection. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an overfill prevention inspection and include the actuation height in the inspection.
AL [SP2/SP5]	» *613-2.2(e)(1)(ii):* The overfill prevention equipment was not verified to activate at the correct height (per the tank working capacity) as part of the overfill prevention inspection. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an overfill prevention inspection and include the equipment's operability in the inspection.

Options

Automatic Shutoff Valve (ASV)

Automatic shutoff valves are mechanical devices installed within the drop tube of the fill pipe and utilize a float connected to a fill valve: the float rises as the tank is filled, which then causes the incoming petroleum to push the fill valve down. This shuts off flow into the tank, causing a visible movement in the delivery hose which tells the person responsible for the transfer to stop filling. A small hole at the side of the shutoff valve allows the delivery person to drain the contents of the hose into the tank (albeit at a much lower rate).

Two variants of the ASV exist, mainly differing on the type of float used:

- The older design has a flapper arm which hinges upward (hence the name “flapper valve”) and towards the other end of the underground tank.
    - It is prone to mechanical issues with both the float arm and the hinge.
    - Verifying that a flapper valve is in good working order requires its removal from the fill pipe.
- The newer design has a cylindrical (or semi-cylindrical) float that rises vertically.
    - It has a more enclosed construction (mostly to better avoid breaking components).
    - These cylindrical floats may be tested for operability without disassembly (using an included testing tool).

Both designs are often only compatible with gravity head deliveries. Pressurized deliveries are known to interfere with an ASV’s ability to close, which often results in petroleum spraying out of the fill pipe when disconnecting the delivery hose; to this end, a modern, more robust design was created (primarily for aboveground tanks) to handle higher pressures and prevent sprays. Peddle trucks with loose fills also should not be used to deliver petroleum to tanks with ASVs; not only are peddle trucks and loose fills outlawed by the Fire Code[193], but the nozzles for loose fills also directly bypass the shutoff valve, making overfills more likely.

ASVs must be set to the appropriate actuation height, in accordance with one of the following:

- The working capacity is set to 95% of the tank design capacity.
    - ASVs are often set to meet this out of convenience: a 5% ullage (i.e., the volume of empty space within the tank) is easier to calculate and often already accounts for the fittings.
- The ASV activates before the fittings at the top of the tank are exposed to the stored petroleum.
    - ASVs are set up to meet this only when the tank is either:
        - too big, such that the unused 5% of the design capacity would be a considerable storage volume; or
        - too small, such that a 5% ullage does not prevent wetting of the fittings.

The type of deliveries made to the tank should also be considered for the chosen working capacity:

- Low flowrates (i.e., gravity head deliveries) mean more control over the delivery, allowing for a higher working capacity.
- High flowrates (i.e., pressurized deliveries) mean less control over the delivery, necessitating a lower working capacity.

Automatic shutoff valves must also be kept in good working order; to this end, the operability of ASVs – as an overfill prevention device – must be verified:

- at valve installation/reinstallation;
- within 30 days after valve repair; and
- every three years thereafter.

[193] NYS Fire Code (2020) 5704.2.7.5.5.2: Underground tanks for Class I liquids having a capacity greater than 1,000 gallons (3785 L) shall be equipped with a tight fill device for connecting the fill hose to the tank.

Triennial OP (equipment) inspection records must be retained for three years or until the next inspection, whichever is later. These records must have the following information.

	OP Inspection – Automatic Shutoff Valves

SP2 Overfill Prevention Records:
 	
Required Information
	• Tank ID number
	• Date/time of inspection
	• Actuation height and/or working capacity set for tank/ASV
	• Verification of the following:
	  ○ ASV is installed properly.
	  ▪ The valve is installed right-side up.
	  ▪ The flapper valve is oriented such that the flapper arm does not hit any part of the tank.
	  ○ ASV is in good working condition.
	  ▪ The valve (as a whole) is free of damage/corrosion.
	  ▪ The float moves freely.
	  ▪ The fill valve moves into the path of the petroleum when the float rises.
	  ○ ASV activates at the correct/appropriate height (per the tank working capacity).
	• Any issues identified with the criteria above

Automatic shutoff valves that are shown to have issues with the criteria specified above must either be repaired or replaced[192] with another automatic shutoff valve or a high-level alarm.

Issues

- **Automatic Shutoff Valve with Other Overfill Prevention Equipment**

  Tank systems may be fitted with multiple types of overfill prevention equipment that are not always compatible with each other – automatic shutoff valves may be used with high-level alarms but not ball float valves. Ball float valves are typically set to activate when the tank is 90% full, well before the automatic shutoff valve (which is typically set to 95%); the closing of the ball float valve reduces the flow rate into the tank, which in turn prevents the (full) closing of the automatic shutoff valve. This may lead to an overfill larger than the capacity of the spill bucket.

- **Evidence of Installation**

  Facilities may at times claim automatic shutoff valves as their method of overfill prevention despite not being installed. Inspectors should verify the presence of the shutoff valve by looking down into the fill pipe – the bottom of the tank should be visible through a somewhat crescent-shaped opening (as opposed to the circular shape of the round drop tube). The “flat” side of this opening should face the far end of the tank.

- **Tampering with the Automatic Shutoff Valve**

  Automatic shutoff valves are sometimes obstructed, often to deliver more petroleum than the tank’s working capacity (i.e., “topping off” a tank). Operators must ensure that no such obstruction (e.g., gauging sticks holding the fill valve open) exists because it renders the shutoff valve nonfunctional, which is a serious violation.

Ball Float Valve (BFV)

Ball float valves – also known as float vent valves or flow restrictors – are installed within a tank's vent pipe and consist of a tube to which a cage is attached to hold a hollow metal sphere (i.e., the ball). The ball floats with the rising petroleum level in the tank (during delivery) until a seal is created with the tube and consequently, the vent pipe. The tank is no longer able to vent, so the delivery flow rate is reduced, and the hose visibly moves – at this point, the person responsible for the transfer must stop filling. A small bleed hole on the side of the valve tube allows the delivery person to drain the hose into the fill pipe.

BFVs must be set to the appropriate actuation height, in accordance with one of the following:

- The working capacity is set to 90% of the tank design capacity.
    - BFVs are often set to meet this out of convenience: a 10% ullage (i.e., the volume of empty space within the tank) is easier to calculate and often already accounts for the fittings.
- The BFV activates 30 minutes prior to overfilling (so none of the fittings at the top of the tank are exposed to the stored petroleum).
    - BFVs are set up to meet this only when the tank is either:
        - too big, such that the unused 10% of the design capacity would be a considerable storage volume; or
        - too small, such that a 10% ullage does not prevent wetting of the fittings.

Ball float valves are susceptible to issues during operation. The ball sometimes gets stuck on the tube which may cause cavitation (i.e., warping due to excess vacuum) of the tank when the tank is unable to vent, which in turn can lead to structural damage to the tank. This can also lead to over-pressurization of the tank, which can be exacerbated by pressurized deliveries – as such, only gravity head deliveries must be made to tanks with BFVs.

Ball float valves also have a limited use: a closed BFV forces petroleum to look for a different vent, which is often any equipment that has an opening.

- Tank systems with suction piping (with suction pumps and air eliminators) cannot be equipped with ball float valves as petroleum may leak at the dispenser.
- Coaxial Stage I vapor recovery also precludes the use of ball float valves as petroleum can exit through this outer pipe of the fill port when the tank is overfilled.
- Additional fill pipes/gauge openings/other fittings without "trapdoor" devices (e.g., check valves for tank-top openings) may also bypass the ball float valve and lead to leaks when the tank is overfilled.

BFVs on tank systems with this equipment must be replaced[192] with either an automatic shutoff valve or a high-level alarm.

Ball float valves must also be kept in good working order; to this end, the operability of BFVs – as an overfill prevention device – must be verified:

- at valve installation/reinstallation;
- within 30 days after valve repair; and
- every three years thereafter.

Triennial OP (equipment) inspection records must be retained for three years or until the next inspection, whichever is later. These records must have the following information.

	OP Inspection – Ball Float Valves

SP2 Overfill Prevention Records:
 	
Required Information
	• Tank ID number
	• Date/time of inspection
	• Actuation height and/or working capacity set for tank/BFV
	• Verification of the following:
	  ○ BFV is installed properly.
	  ▪ The valve is installed right-side up.
	  ▪ The valve is fitted to a tank system with no other equipment that would prevent the activation of the valve, such as:
	  ⊣ suction pumps and air eliminators;
	  ⊣ coaxial Stage I vapor recovery;
	  ⊣ additional fill pipes/gauge openings/other fittings without “trapdoor” devices (e.g., check valves for tank-top openings); or
	  ⊣ automatic shutoff valves where the ball float valve activates first.
	  ○ BFV is in good working condition.
	  ▪ The valve – as a whole – can be extracted from the vent pipe.
	  ▪ The valve is not clogged with debris/corroded such that air can still flow through the valve when activated.
	  ▪ The ball is free of cracks/damage.
	  ▪ The ball moves freely within the cage.
	  ▪ The bleed hole is open and near the top of the tank.
	  ○ BFV activates at the correct/appropriate height (per the tank working capacity).
	• Any issues identified with the criteria above

Ball float valves that are shown to have issues with the criteria specified above must be replaced[192] with either an automatic shutoff valve or a high-level alarm.

Issues

- **Ball Float Valve with Other Overfill Prevention Equipment**

  Tank systems may be fitted with multiple types of overfill prevention equipment that are not always compatible with each other – ball float valves may be used with high-level alarms, but not automatic shutoff valves. BFVs are typically set to activate when the tank is 90% full, well before the ASV (which is set to 95%); the closing of the ball float valve reduces the flow rate into the tank, which in turn prevents the (full) closing of the automatic shutoff valve. This may lead to an overfill larger than the capacity of the spill bucket.

- **Compatibility with Dual-Point Stage I Vapor Recovery**

  Vapor recovery ports are of particular concern with tanks fitted with ball float valves, as they may serve as leak points in the event of an overfill. Dual-point vapor recovery cannot be used with ball float valves, unless either both the vent pipe and the vapor recovery pipe have ball float valves, or the vapor recovery pipe branches (i.e., tees) from the vent pipe fitted with a ball float valve that is located below the branch.

- **Obstructed Drain Valves and Damaged Spill Buckets**

  Some fill port catch basins have drain valves that lead to the tank. Obstructed drain valves are known to circumvent ball float valves during delivery by acting as a vent after the ball float is activated. Damaged spill buckets must also be addressed for the same reason.

High-Level Alarm (HLA)

High-level alarms primarily consist of an electronically monitored float – also known as a magnetostrictive probe, and often (though not always) tied to a tank gauging system – which activates an alarm to alert the person responsible for the transfer when to stop filling. (The alarm must be audible and/or visible from every tank fill port during typical working and weather conditions.)

HLAs must be set to the appropriate actuation height, in accordance with one of the following:

- The working capacity is set to 90% of the tank design capacity.
    - HLAs are often set to meet this out of convenience: a 10% ullage (i.e., the volume of empty space within the tank) is easier to calculate and often already accounts for the fittings.
- The HLA activates one minute prior to overfilling (so none of the fittings at the top of the tank are exposed to the stored petroleum).
    - HLAs are set up to meet this only when the tank is either:
        - too big, such that the unused 10% of the design capacity would be a considerable storage volume; or
        - too small, such that a 10% ullage does not prevent wetting of the fittings.

The type of deliveries made to the tank should also be considered for the chosen working capacity:

- Low flowrates (i.e., gravity head deliveries) mean more control over the delivery, allowing for a higher working capacity.
- High flowrates (i.e., pressurized deliveries) mean less control over the delivery, necessitating a lower working capacity.

HLAs, by themselves, are not capable of automatically stopping or restricting flow: as such, a high-level alarm may be paired with either an automatic shutoff valve or a ball float valve but must always activate well before the tank is full to give the person responsible for the transfer enough time to react appropriately.

High-level alarms must also be kept in good working order; to this end, the operability of HLAs – as an overfill prevention device – must be verified:

- at alarm installation/reinstallation;
- within 30 days after alarm repair; and
- every three years thereafter.

Triennial OP (equipment) inspection records must be retained for three years or until the next inspection, whichever is later. These records must have the following information.

SP2 Overfill Prevention Records: ***Required Information***	***OP Inspection – High-Level Alarms***

	• Tank ID number
	• Date/time of inspection
	• Actuation height and/or working capacity set for tank/HLA
	• Verification of the following:
	  ○ HLA is installed properly.
	  ▪ The float is installed right-side up.
	  ○ HLA is in good working condition.
	  ▪ A simulation of the tank being filled to its working capacity activates the alarm.
	  ▪ The alarm activates just before the float hits the tank's working capacity (and not after).
	  ▪ Stick measurements match the float measurements (read through the tank monitoring console).
	  ▪ The float moves freely across the length of the probe stem.
	  ○ HLA activates at the correct/appropriate height (per the tank working capacity).
	• Any issues identified with the criteria above

High-level alarms that are shown to have issues with the criteria specified above must either be repaired or replaced[192] with another high-level alarm or an automatic shutoff valve.

Issues

- **Continuous Power to High-Level Alarms**

  High-level alarms require continuous power to work, especially when deliveries are made after normal operating hours (i.e., facility staff are not on site and/or have left for the day). High-level alarms should be plugged into a wall socket with a dedicated circuit breaker (separate from everything else) for this reason. Inspectors should verify continuous operability by reviewing the facility's inventory records for any overfills after hours (or deliveries that result in exceeding the tank's working capacity) – these may indicate that the high-level alarm is not operating continuously.

- **High-Level Alarms Without Test Buttons/Functions**

  High-level alarms must be visible and/or audible from all fill ports and be in good working condition. Inspectors should verify this by standing by the fill port and either looking for the high-level alarm, or having the operator manually test the alarm (i.e., hit the test button).

  However, not all HLAs are equipped with a button to test the operability of the alarm. Inspectors can assume that an alarm with no test function is operational and audible/visible from the fill port if there is no evidence of an overfill – at the fill port, in the inventory records, or in the spill history of the tank monitoring console (if so equipped) – and the alarm passed the last triennial OP inspection.

- **Vent Whistles as High-Level Alarms**

  Vent whistles cannot be used as high-level alarms – to satisfy overfill prevention requirements – as they do not trigger an alarm to signify when the transfer must stop. Vent whistles are also not very reliable, as their efficiency largely depends on site conditions and the hearing of the person responsible for the transfer.

Valves

Purpose

Valves control the flow of petroleum through piping[194]: this flow can be stopped or diverted to avoid spills in case of equipment failure or user error.

Requirements

Tank systems must be equipped with the following valves (as necessary) and meet applicable requirements[195].

SP2 Valves	Cat. 1 Valve	Cat. 2 Valve	Cat. 3 Valve
Shear Valve	• *Required for:* Remote dispensers (i.e., not tank-mounted) for motor fuel, connected to pressurized piping • *Able to:* Automatically prevent flow of petroleum through the pipe, in the event of a fire or impact (to the dispenser) • *Located:* At grade, at the base/inlet of the dispenser *Note:* shear valves with a slip-joint feature cannot be used to meet regulatory requirements.		
	Designed and Installed: In accordance with: • the manufacturer's instructions (and an acceptable code of practice[196]); and • NFPA 30A (1984), section 4-3.6		*Designed and Installed:* In accordance with: • the manufacturer's instructions (and an acceptable code of practice[196]); and • NFPA 30A (2012), section 6.3.9
Solenoid/ Anti-Siphon Valve	• *Required for:* Pressurized piping, suction piping, etc., and dispensers, for motor fuel, at an elevation below the top of the tank • *Able to:* Prevent flow of petroleum by gravity, in the event of pipe or dispenser/hose failure • *Located:* Adjacent to and downstream of the operating valve		
	Designed and Installed: In accordance with: • the manufacturer's instructions (and an acceptable code of practice[196]); and • NFPA 30A (1984), section 2-1.7		*Designed and Installed:* In accordance with: • the manufacturer's instructions (and an acceptable code of practice[196]); and • NFPA 30A (2012), section 4.2.4

Check Valve	• *Required for:* Remote fill/delivery piping used for pressurized deliveries and associated with tanks:
	  ○ that have both a remote fill and a tank-top fill; or
	  ○ where petroleum levels in the tank are at a higher elevation than the remote fill port
	• *Able to:* Prevent backflow – spills/overfills – through the fill pipe during delivery/transfer (when possible)
	• *Installed:* In accordance with the manufacturer's instructions (and an acceptable code of practice[196])		

Operating Valve	• *Required for:* Tank-piping connections (i.e., not vent piping: delivery piping, pressurized piping, suction piping, etc.):
	  ○ through which petroleum can normally flow; and
	  ○ that have the potential to drain the tank by gravity
	• *Able to:* Prevent flow of petroleum by gravity, in the event of:
	  ○ pipe or dispenser/hose failure; or
	  ○ repairs to/replacement of any solenoid/anti-siphon valves immediately downstream of the operating valve
	• *Located:* As close to the tank connection as practicable, and immediately upstream of any solenoid/anti-siphon valves
	• *Installed:* In accordance with the manufacturer's instructions (and an acceptable code of practice[196])		

[194] This section does not cover valves used for overfill prevention. See **Overfill Prevention** on p. 179.
[195] Valve requirements for SP2 tank systems are found in 6 NYCRR paragraph 613-2.1(b)(6).
[196] See **Installation** on p. 52.

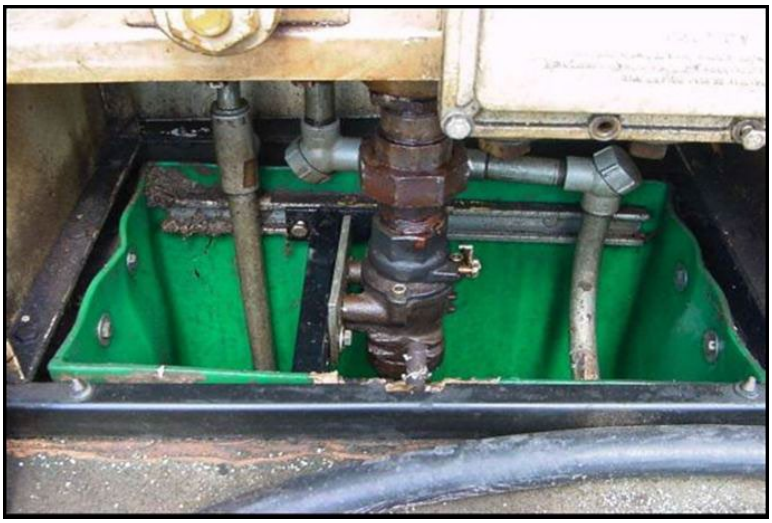
Questions

VL_pre	*Is the required equipment present?*
Y	» No issues were found under this question.
NS	» *613-2.1(b)(6)(i):* There is no shear valve installed beneath the dispenser. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must install (and submit documentation of) a shear valve.
XPS	» A shear valve is not required because the dispenser is not tied to either pressurized piping or a tank storing motor fuel.
NA	» *613-2.1(b)(6)(ii):* The piping/dispenser is not equipped with the required solenoid valve/anti-siphon valve. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must install (and submit documentation of) a solenoid valve/anti-siphon valve.
XPA	» A solenoid valve/anti-siphon valve is not required because the tank either is not storing motor fuel or does not cause a gravity head on the dispenser.
NC	» *613-2.1(b)(6)(iii):* The (remote) fill pipe is not equipped with the required check valve. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must install (and submit documentation of) a check valve.
XPC	» A check valve is not required because the tank does not have any remote fill ports, the tank does not receive pressurized deliveries, or the fill port is at a higher elevation than petroleum levels in the tank.
NO	» *613-2.1(b)(6)(iv):* The piping is not equipped with the required operating valve. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must install (and submit documentation of) an operating valve.
XPO	» An operating valve is not required because there is no piping through which the tank can be siphoned/drained by gravity.

VL_gwo	*Is the equipment in good working order?*
Y	» No issues were found under this question.
SIN	» *613-2.1(b)(6)(i):* The shear valve was not properly installed. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must correct (and submit documentation for) the shear valve installation.
SO	» *613-1.12 / 2.1(b)(6)(i):* The shear valve is inoperable or would not activate if the dispenser were dislodged from the base. » *Note(s):* Note that improper installation may also render the valve inoperable, but should instead be captured in Response **SIN**. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must repair or replace (and submit repair/replacement documentation for) the shear valve.
NXS	» *613-1.4(b):* The shear valve could not be accessed for inspection (e.g., locked/jammed dispenser, dispenser not designed to be accessed). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must submit documentation that the shear valve is present and in good working order/properly installed. » *Additional Action(s):* The inspector should conduct a follow-up inspection (where possible) to observe the shear valve rather than rely on installation documentation or photographs from the facility.
ADO	» *613-2.1(b)(6)(ii):* The solenoid valve/anti-siphon valve was not installed adjacent to and downstream of the operating valve. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must install the solenoid valve/anti-siphon valve in the correct location and submit a photograph showing the relocated valve.
AO	» *613-1.12 / 2.1(b)(6)(ii):* The solenoid valve/anti-siphon valve is inoperable. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must repair or replace (and submit repair/replacement documentation for) the solenoid valve/anti-siphon valve.
CO	» *613-1.12 / 2.1(b)(6)(iii):* The backflow check valve is inoperable. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must repair or replace (and submit repair/replacement documentation for) the check valve.
OO	» *613-1.12 / 2.1(b)(6)(iv):* The operating valve is inoperable. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must repair or replace (and submit repair/replacement documentation for) the operating valve.

Valve Types

Shear Valve



Shear valves are (typically) mechanical valves attached to pressurized piping beneath a dispenser and anchored to a metal armature within the under-dispenser containment. These valves are designed to automatically stop the flow of motor fuel should the dispenser become dislodged from its base (commonly due to vehicular collisions with the dispenser).

The valve has a shear point/plane – the weakest point in the valve, which must be set at the right height (i.e., at grade) – and at least one internal, spring-loaded poppet held open by a fusible link (i.e., a metal or plastic truss designed to fail under specific conditions). Shear valves break at the shear point when dispensers become dislodged, and the fusible link either breaks or melts (if a fire occurs), allowing the poppet to close and stopping the petroleum from flowing out of the now-exposed piping.

Issues

- **Proper Shear Valve Installation**

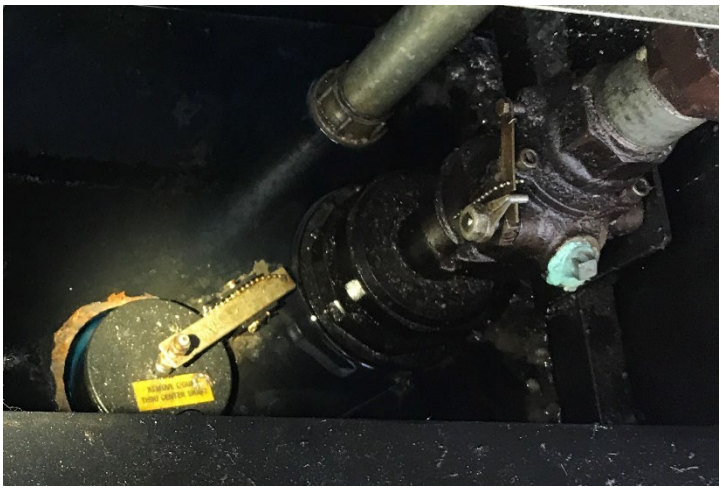
  A common issue with shear valves is incorrect installation. Bolts must anchor the shear valve at the shear point itself such that the shear point is at-grade; this allows the shear valve to activate properly when the dispenser is dislodged. Inspectors should look for any signs of improper installation, such as missing or loose bolts, corroded/damaged supports, and shear valves set higher or lower than grade level.

- **Tampered-With/Disabled Shear Valves**

  Shear valves may at times be tampered with or disabled (due to the cost of replacing it) such that the valve is permanently open, thereby defeating the purpose of the shear valve. Inspectors should look for tools (e.g., socket wrenches, screwdrivers, etc.), wire, or other miscellaneous items attached to the shear valve (where the fusible link would be) and holding the valve open. Shear valves that are missing the fusible link, have been tampered with, or are otherwise disabled must be either repaired or replaced.

- **Shear Valves Associated with Mechanical Float Devices**

  The fusible link holding open the shear valve poppet may sometimes be linked to a mechanical float device located within the under-dispenser containment. The float device will trip the shear valve when liquids are present in the dispenser sump. (Image to the right depicts a shear valve that was tripped by the mechanical float device.)



Solenoid/Anti-Siphon Valve

Solenoid and anti-siphon valves are two types of valves that automatically block the flow of motor fuel when the dispenser is not in use. Such valves are required on dispensing piping (often suction piping) where the petroleum level (in the tank) is normally higher than the dispenser: should either the piping or the dispenser fail, the tank will empty its contents by gravity without these valves.

These valves accomplish the same result but work and are constructed differently.

- Solenoid valves are electrically actuated valves, requiring both power and an electrical signal from the dispenser (i.e., the hook signal) to activate – solenoid valves are normally closed, but open when receiving current/electrical power.
- Anti-siphon valves are hydraulically activated devices that require enough of a vacuum downstream of the valve (e.g., vacuum from a suction pump) to overcome the spring holding the valve closed.

Solenoid and anti-siphon valves are often used in conjunction with operating valves (as required for all piping connected to tanks that could potentially be drained by gravity); these valves must always be installed immediately upstream of any solenoid/anti-siphon valves to provide a manual way of shutting off flow when the solenoid/anti-siphon valve needs to be repaired/replaced. Conversely, any ALLD fitted to the same pressurized piping must be downstream of the solenoid/anti-siphon valve, so the ALLD is not obstructed in detecting leaks.

Issues

- **Solenoid/Anti-Siphon Valve Placement Relative to the Operating Valve**

  Certain solenoid/anti-siphon valves are designed for placement at the highest point of the piping, often supplanting the operating valve. Such valves can only be used if the operating valve is still placed upstream of the solenoid/anti-siphon valve: the flow of petroleum through the solenoid/anti-siphon valve must be stopped before performing repairs/maintenance to avoid spills.

Check Valve

Check valves are designed to ensure that petroleum flows only in one direction and automatically prevent backflow (i.e., spills/overfills) without direct human intervention. These are required for all remote fill pipes where backflow is expected, especially those for tanks that receive pressurized deliveries and either:

- feature both a remote fill and a tank-top fill; or
- have petroleum levels at a higher elevation than the remote fill port (e.g., marina facilities).

Issues

- **Equivalent Devices for Check Valves**

  There are limited situations where the (remote) fill pipe is also used to draw petroleum from the tank, for which a check valve may not be appropriate; for such setups, a readily accessible (or remotely operable) operating valve may be used in lieu of the check valve.

Operating Valve

Operating valves – also known as block valves – allow for manual flow control. These are typically hand-operated mechanical valves (e.g., ball valves), though electronic variants do exist.

These are required on all piping from which the tank may be drained by gravity should a leak occur; as such, they are often used in conjunction with solenoid/anti-siphon valves on dispensing piping. Operating valves must always be installed as close as practicable to the tank connection AND immediately upstream of any solenoid/anti-siphon valves on such lines – this provides a manual way of shutting off flow when the solenoid/anti-siphon valve needs to be repaired/replaced.

Subpart 3

UST Systems Subject to Only Title 10

Out-of-Service (OOS) Status and Permanent Closure

Purpose

Out-of-service requirements outline the steps that must be taken to avoid – or at least reduce – unnecessary deliveries, human error, and the resulting spills/releases from tank systems that are not in use, as well as prepare these tank systems for permanent closure if not returned to service. Similarly, permanent closure requirements establish procedures to safely inactivate tank systems, thereby minimizing the risk of (and addressing any) spills/releases that can occur – or are discovered – as they exit the PBS program. Both requirements also reduce the chances of tank abandonment and future environmental/fire safety concerns associated with the tank system.

Requirements

Tank systems are considered out of service (OOS) when:

- taken out of service (e.g., for repairs), by updating the facility registration; or
- no longer receiving or dispensing petroleum.

Facilities that have a tank system out of service for extended periods of time must do the following within the specified timeframes (relative to the date the tank system is rendered out-of-service)[197].

Timeframe	***Actions That Must Be Taken When a SP3 UST System is OOS***
Upon the Tank System becoming OOS	*UNTIL the tank undergoes either a return to service or permanent closure:* Continue normal operation/maintenance and periodic inspection/testing/monitoring of: • Cathodic protection • Leak detection, UNLESS the tank is empty (i.e., the tank has less than 1 inch or 2.5 cm of petroleum):
Within 30 Days After	Update the PBS registration to reflect tank status
At 90 Days After	• Empty the tank (so that it has less than 1 inch or 2.5 cm of petroleum) if not yet emptied • Cap/secure all piping/ancillary equipment/manways (but leave vent lines open)
More than 12 Months After	Close the tank system

Tank systems may be brought back into service after having been legally OOS for 12 months or less – doing so requires:

- resuming the requirements suspended due to the tank being empty (either in accordance with the original schedule or upon return to service);
- updating the facility registration (within 30 days of the change); and
- prepping all piping, ancillary equipment, and manways, as necessary.

UST systems, however, may not be returned to service after having been OOS for more than 12 months; these tank systems must undergo permanent closure[198] and "exit" the scope of the PBS regulations.

[197] Out-of-service requirements for SP3 tank systems are found in 6 NYCRR subdivision 613-3.5(a).
[198] Permanent closure requirements for SP3 tank systems are found in 6 NYCRR subdivision 613-3.5(b).

Permanent closure means undertaking: a complete tank removal; an in-place closure; or a change-in-service (i.e., the tank system is used to store a non-petroleum substance). Facilities with tank systems that undergo permanent closure must do the following within specific timeframes (relative to the closure date).

<table>
<tr><th rowspan="2">Timeframe</th><th colspan="3">Actions the Facility Must Take When a SP3 UST System Undergoes…</th></tr>
<tr><th>Tank Removal</th><th>In-Place Closure</th><th>Change-in-Service</th></tr>
<tr><td>At Least 30 Days Before</td><td colspan="3">Notify the DEC of the closure (i.e., send DEC a pre-work notification), UNLESS the closure is in response to corrective action in accordance with 6 NYCRR Subpart 613-7</td></tr>
<tr><td rowspan="3">Upon Permanent Closure</td><td colspan="2">Perform the tank removal/in-place closure in accordance with one of the following[199]:
• API RP 1604 (March 1996)
• PEI RP 1700 (2018)</td><td>Perform the change-in-service in accordance with one of the following[199]:
• API RP 1604 (March 1996)
• API RP 2015 (August 2001)
• API RP 2016 (August 2001)
• NFPA 326 (2010)
• PEI RP 1700 (2018)</td></tr>
<tr><td>• Empty/clean the tank system of liquids/sludge
• Disconnect lines/fill pipes and either:
o remove the lines; or
o cap/secure the lines</td><td>• Empty/clean the tank system of liquids/sludge/vapors
• Disconnect lines/fill pipes and either:
o remove the lines; or
o cap/secure the lines
• Fill all voids with an inert material (e.g., sand, concrete slurry) UNLESS a self-structural tank retrofit will be installed within the disused tank
• Secure all manways to prevent precipitation from seeping into the tank</td><td>Empty/clean the tank system of liquids/sludge/vapors</td></tr>
<tr><td colspan="3">Terminate all petroleum deliveries to the tank system</td></tr>
<tr><td>Within 30 Days After</td><td colspan="3">• Update the facility registration to reflect tank status
• Send DEC a copy of the closure report</td></tr>
</table>

[199] Facilities may also comply with a code of practice developed by a nationally recognized association or independent testing laboratory and approved by the DEC.

Permanent closure records consist of the closure report, which must be retained for (at least) three years after closure or until the facility has been permanently closed, whichever is later. This report must have the following information.

	Closure Report

SP3 Closure Records:
 	
Required Information
	• PBS number and site address
	• Date/time of permanent closure
	• General information about the tank:
	  ○ Tank ID number
	  ○ Design capacity
	  ○ Type of petroleum (or a constituent/tracer compound) previously stored
	  ○ Tank manufacturer/model
	• Name of the party (i.e., person/company) who performed the closure
	• Cover letter from the party that performed the closure, indicating the following:
	  ○ History of the tank system
	  ○ Actions taken to close the tank (and the standard by which the closure was performed)
	  ○ That the tank system did undergo proper closure
	• Site diagram showing tank/piping location(s)
	• Photos taken of and notes or field observations made during closure on the following:
	  ○ Any spills found
	  ○ Failed equipment (for tank removal)
	  ○ Whether the piping was removed (or capped and secured in place, and why)
	• Invoices/job tickets for the closure
	• Bills of lading
	• Disposal manifests (for product, sludge, and rinse water pulled from the tank)
	• Tank scrap receipt or other disposal receipt (for tank removal)
	• Evidence that the tank was filled to its design capacity, with a solid inert material (for in-place closure)
	
	If spills were observed during closure, the closure report must also include the following:
	• Site diagram detailing the extent of contamination and excavation, sampling locations, etc.
	• Sampling results and comparison to standards
	• Summary of cleanup performed, including reference to any spills called in (and the spill number(s))

Any contaminated soils/groundwater or petroleum spills observed during closure are considered releases which must be reported to the Spill Hotline within two hours after discovery; corrective action must also begin immediately in accordance with 6 NYCRR Subpart 613-7.

Issues

- **When a Tank Is Considered OOS**

  The minimum length of time for which a tank is not dispensing or receiving petroleum to be considered OOS, is not defined; inspectors are encouraged to use their discretion when determining if the OOS requirements apply to a specific tank system. Tank systems at facilities that do not operate seven days a week (e.g., gas stations, municipal garages, etc.) are not considered OOS when the facility is closed (e.g., during the weekend), but those at facilities that cease operations seasonally (e.g., marinas during the winter season) are indeed OOS during that “closed” period.

- **Advance Notification Prior to Mandatory Closure**

  Tank systems that will not be returned to service in 12 months must be closed permanently the day after the 12-month mark, and DEC be notified at least 30 days in advance of the closure. Facilities are thus advised to ascertain if the tank will return to service within 12 months: the 30-day notice may need to be sent on the 11-month mark if it is not clear that the tank will return to service within 12 months.

- **Identifying Closed Tank Systems**

  Inspectors should note any tank systems on the site registration that are no longer at the facility – failing to notify DEC of a permanent tank system closure is a violation. Inspectors should follow up with the records the facility has for the tank removal and ensure that the tank system was properly closed.

  Facilities are strongly advised to notify DEC of the removal of any previously, properly closed (in-place) tanks – even if DEC was promptly notified of its original closure – to formally reflect the removal in the facility registration; however, any spills/releases observed during removal must still be reported to the Spill Hotline within two hours after discovery.

- **Expanding Foam as Inert Material for In-Place Closures**

  Expanding foam may be used as an inert material (in lieu of sand and concrete) to fill tanks during in-place closures, but there are caveats. Foam is seldom used for massive tanks as they may not be able to fill the entire volume of the tank before curing; these unfilled pockets could then become a structural liability as well as a fire safety concern. The density of the cured foam is also an issue: foam may not have a density comparable to those of sand (~101.8 lb/ft^3) and concrete (~150 lb/ft^3), thereby rendering the filled tank susceptible to collapse when a load is placed on it (e.g., traffic or parked cars).

- **Bringing Tank Systems that Underwent a Permanent Closure Back into Service**

  Permanent closure is a one-way street. Permanently closed tank systems may not be brought back into service (like legally out-of-service tank systems), as these are considered to have exited the scope of the PBS regulations. Reusing such tanks – at any location to store petroleum – means re-entering the scope of the PBS regulations as new installations AND meeting all pertinent standards/requirements for the latest Category before use. To this end, facilities can obtain a recertification from either the original tank manufacturer (for shop-fabricated tanks), or from the professional engineer[200] (PE) in charge of rebuilding and/or modifying the tank (for field-fabricated tanks).

- **Storing a Different Type of Petroleum**

  Storing a different type of petroleum (such that the applicable Subpart changes) does not constitute a change-in-service and does not make the tank a newly installed tank; as such, the tank does not need to meet newer Category standards.

- **Compartmented Tanks, Siphoned Tanks, and Tanks with Manifolded Piping**

  Each compartment in a compartmented tank is treated under the PBS regulations as a separate tank because petroleum levels in these compartments do not equilibrate or interact in any way; however, each compartment is part of the same tank system as each compartment fits within the same shell. Compartments that are not in service must be closed in-place, but the requirement for filling with an inert material is waived unless all compartments are to be closed.

  Siphoned tanks (i.e., tanks connected via piping that acts as a siphon) are treated as a single tank as petroleum levels within them equilibrate; while such tanks are considered part of the same tank system, closing one of the siphoned tanks may be done (normally) without closing both tanks, as long as the tank that remains in service can act as a standalone tank.

  Similarly, tanks with manifolded piping (i.e., tanks with piping connected downstream of their respective submersible pumps, supplying a single combined pipe) generally behave like independent tanks: the tank volumes are not combined when in the tanks, and a failure in either tank will not affect the amount of product in the other tank. Such tanks are considered to be part of different tank systems and can be closed independently.

[200] This PE must be licensed and registered in New York State (NYS) by the NYS Education Department under Title 8, Article 145 of the Education Law.

Questions

OC_rc	***What's the tank system's status?***
OC_ri	***Is the registered tank status accurate?*** ***Note: if the tank is actually closed/out of the PBS program, note the closure date in Tank System Information.***
Y	» No issues were found under this question.
IN	» *613-1.9(a)(4):* The registered tank status is inaccurate. » *Note(s):* This Response does not include expired facility registrations, inaccurate facility information, unregistered tanks, or unregistered facilities; such violations should be captured under Question **REG_info**. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must correct the site registration online to reflect the tank's status. » *Additional Action(s):* The inspector should note the specific inaccuracy with the tank status under Question **OC_rc**, to include it in the list of registration discrepancies (in the NOV) that need to be corrected.
OC_oos	***Is the OOS tank following all pertinent requirements?*** ***Note: AST systems can be OOS beyond 12 months if at a facility with at least one other in-service tank system.***
Y	» No issues were found under this question.
MT	» *613-3.5(a)(3)(i):* The tank system has been out of service for more than 90 days, but the tank has not been emptied. » *Note(s):* The tank is considered empty when it has no more than 2.5 cm (1 in) of residue. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must empty the tank and submit documentation that the tank has been emptied.
VL	» *613-3.5(a)(3)(ii):* The tank system has been out of service for more than 90 days, but the vent lines have been closed prematurely. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must open the vent lines and submit a photograph showing the open vent lines.
PCS	» *613-3.5(a)(3)(iii):* The tank system has been out of service for more than 90 days, but the piping/ancillary equipment/ports/manways have not yet been capped/secured. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must cap/secure the piping/ancillary equipment/ports/manways and submit a photograph showing the capped/secured equipment.
12M	» *613-3.5(a)(4):* The tank system has been out of service for more than 12 months but has not yet been permanently closed. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to permanently close the tank system (in accordance with an appropriate code of practice) within 60 days after the date of the NOV.

OC_pc	Did the permanently closed tank undergo proper closure?
Y	» No issues were found under this question.
PRN	» *613-3.5(b)(1):* A pre-work notification was not submitted to the DEC at least 30 days prior to permanent closure of the tank system. » *Note(s):* Failure to notify the DEC prior to closure is a violation without a (direct) curative measure; however, it should still be treated as a separate/distinct violation from not keeping registration information current and accurate (Question **REG_info**, Response **IN**). » *Curative Measure(s):* If the site registration has yet to be updated, within 7 calendar days after the date of the NOV, the facility must correct the site registration online (to reflect the date of closure) and – if necessary – submit the closure report detailing that the tank system underwent proper closure in accordance with an appropriate code of practice.
IM	» *613-3.5(b)(4)(i) – (iii):* The tank system did not undergo proper permanent closure (in accordance with an appropriate code of practice). » *Note(s):* The closure report is the primary evidence that the tank system underwent proper permanent closure; if the closure was performed properly, but either a copy of the closure report was not submitted to the DEC within 30 days after closure, or the closure report is not being retained for at least three years after tank system closure or until the facility has been permanently closed (whichever is later), Response **NR** or **NSC** under Question **OC_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to permanently close the tank system (in accordance with an appropriate code of practice) or be brought into compliance with all requirements of the PBS regulations, within 60 days after the date of the NOV. » *Additional Action(s):* A tank that was removed improperly may require further action (i.e., perform a site assessment) to ensure that the surrounding environment was not negatively impacted.
OC_rec	***Are the closure records being retained?*** ***Note: records must be retained for 3 years after permanent closure or until the facility has been permanently closed, whichever is later.***
Y	» No issues were found under this question.
NR	» *613-3.5(d):* The closure records are not being retained for at least three years after tank system closure or until the facility has been permanently closed (whichever is later). » *Note(s):* Closure records are the primary evidence that the tank system underwent proper permanent closure; if the records cannot be produced AND copies were not submitted to the DEC in a timely fashion, the tank system likely did not undergo proper closure (and Response **IM** under Question **OC_pc** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit the missing closure records. » *Additional Action(s):* The inspector may provide a copy of the missing records to the facility if the copies were previously sent to DEC and the facility does not have their own copy.
NSC	» *613-3.5(d):* A copy of the closure report was not submitted to the DEC within 30 days after permanent closure of the tank system. » *Note(s):* The closure report is the primary evidence that the tank underwent proper permanent closure; if the report cannot be produced AND a copy was not submitted to the DEC within 30 days after closure, the tank likely did not undergo proper closure (and Response **IM** under Question **OC_pc** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit documentation proving that the tank system underwent proper closure (in accordance with an appropriate code of practice).

Tank System: Design/Construction & Compatibility, Installation, Repair

Purpose

Tank systems must be designed, constructed, and installed to meet certain standards/codes of practice, to ensure that they can safely store petroleum. And when tank system components inevitably fail – despite proper construction/installation and timely upkeep – the equipment must be repaired or replaced accordingly to return it to proper working condition before being brought back into service. These actions help reduce the likelihood of future spills/releases from the tank system.

Requirements

Design, Construction, and Compatibility

Design and construction standards address the technical aspects (e.g., materials used, dimensions, compatibility, etc.) of tank system components that routinely contain petroleum[201]. These standards were created through (ongoing) rigorous testing and empirical data collection by various independent third-party testing laboratories. Newer and better technologies are adopted over time, requiring even more stringent standards for the latest available equipment.

Such requirements in the PBS regulations are either explicitly listed design/performance standards or industry-recognized standards and largely differ based on Category (or installation date). Construction requirements for newly installed tank system components are generally not retroactive (i.e., components for old tank systems may – but are not required to – meet newer standards). (Details on design/construction standards for non-primary containment equipment – secondary containment, cathodic protection, valves, etc. – are found in their individual sections in this document.)

[201] 6 NYCRR subdivision 613-1.3(bd): *Primary containment* means any tank, piping, or ancillary equipment which, under normal operating conditions, routinely contains petroleum. This generally excludes fill pipes and vent pipes, among others.

Underground tanks[202] must meet one of the following design/construction standards[203,204] (as applicable).

Design and Construction: SP3 Tanks	***Cat. 1 Underground Tank***[205]	***Cat. 2 Underground Tank***	***Cat. 3 Underground Tank***
Fiberglass-Reinforced Plastic (FRP) Tanks	Any Cat. 3 standard		• CAN4-S615-M83 (1998) • UL 1316 (January 1994) • *(Self-)Structural systems:* ○ UL 1856 (June 2020) • *Double-walled tanks:* ○ UL 1316 (January 1994) ○ UL 1856 (June 2020)
	Any Cat. 2 standard	• UL 1316 (July 1983) • ULC CAN4-S615-M83 (1983)	
	No standard(s) specified		
Cathodically Protected[206,207] ***Steel Tanks***	Any Cat. 3 standard		• UL 58 (December 1996) • ULC-S603-00 (2000) • *Double-walled tanks:* ○ STI F841 (January 2006) ○ UL 58 (December 1996) ○ UL 1746 (January 2007)
	Any Cat. 2 standard	• UL 58 (April 1981) • ULC-S603-M1981 (1981)	
	No standard(s) specified		
Clad/ Jacketed[208,209] ***Steel Tanks***	Any Cat. 3 standard		• UL 58 (December 1996) • ULC-S603-00 (2000) • *Double-walled tanks:* ○ STI F922 (January 2013) ○ UL 58 (December 1996) ○ UL 1746 (January 2007)
	Any Cat. 2 standard	• UL 58 (April 1981) • ULC-S603-M1981 (1981)	
	No standard(s) specified		
Tanks Constructed of Alternative Materials[210]	No standard(s) specified		

[202] Tanks in inaccessible areas may not feasibly meet the standards for underground tanks and may instead meet standards for aboveground tanks in 6 NYCRR paragraph 613-4.1(b)(1), as appropriate.
[203] Facilities may also comply with a code of practice developed by a nationally recognized association or independent testing laboratory and approved by the DEC.
[204] Design/construction standards for SP3 tanks are found in 6 NYCRR paragraph 613-3.1(b)(1).
[205] Cat. 1 tanks were not required to follow specific construction standards to avoid retroactive imposition of then-new requirements.
[206] Cathodic protection systems for Cat. 2 tanks must be designed, fabricated, and installed in accordance with one of the following: API RP 1632 (January 1983); sti-P_3® (July 1983); ULC-S603.1-M1982 (1982).
[207] Cathodic protection systems for Cat. 3 tanks must be designed, fabricated, and installed in accordance with one of the following: NACE SP0285-2011 (2011); sti-P_3® (September 2013); UL 1746 (January 2007); ULC-S603.1-11 (2011).
[208] The cladding/jacket for Cat. 2 tanks must be designed, fabricated, and installed in accordance with either 6 NYCRR subclause 613-3.1(b)(1)(ii)(*c*)(*2*), or one of the cladding/jacket standards for Cat. 3 tanks.
[209] The cladding/jacket for Cat. 3 tanks must be designed, fabricated, and installed in accordance with one of the following: STI F894 (September 2013); STI F922 (January 2013); STI F961 (September 2013); UL 1746 (January 2007).
[210] Certain Cat. 1 underground tanks had constructions/materials different from the first three mentioned above (i.e., FRP, cathodically protected steel, clad/jacketed steel); these alternative constructions were grandfathered into the PBS regulations to avoid the retroactive imposition of then-new requirements. These, however, are unique to/acceptable for only Cat. 1 tanks.

Piping in contact with the ground must meet the following design/construction requirements[211] (as applicable).

Design and Construction: SP3 Piping	***Cat. 1 Piping***[212]	***Cat. 2 Piping***	***Cat. 3 Piping***

Noncorrodible Piping[213]	No standard(s) specified	Designed and constructed (and installed) with access ports to permit tightness testing without the need for extensive excavation	Designed and constructed:
			• in accordance with one of the following[203]:
			  ○ UL 971 (February 2006); or
			  ○ ULC-S660-08 (2008); and
			• (installed) with access ports to permit tightness testing without the need for extensive excavation

Cathodically Protected[214] ***Metal Piping***	No standard(s) specified	Designed and constructed (and installed) with access ports to permit tightness testing without the need for extensive excavation	Designed and constructed: • in accordance with UL 971A (October 2006)[203]; and • (installed) with access ports to permit tightness testing without the need for extensive excavation
Piping Constructed of Alternative Materials[215]	No standard(s) specified		

SP3 tank systems must be proven to meet the required design/construction standards and be compatible[216] with the petroleum type being (or to be) stored in the system. For tank systems storing biofuel blends[217] that are either more than 10% ethanol (>E10), or more than 20% biodiesel (>B20), one of the following compatibility records must be maintained until the tank system undergoes permanent closure:

- Certification or listing of the tank system equipment by a nationally recognized, independent testing laboratory for use with the stored biofuel blend
- Equipment manufacturer's approval in writing, indicating an affirmative statement of compatibility and specifying the range of biofuel blends with which the tank system equipment is compatible

Inspectors may request design/construction and/or compatibility documentation from the facility when they have doubts about the construction of a particular tank system equipment; tank systems for which these records cannot be produced or which cannot be proven to meet the required construction/design standards, must either be repaired/retrofitted to meet these requirements, or be closed[218].

[211] Design/construction standards for SP3 piping (and ancillary equipment) are found in 6 NYCRR paragraph 613-3.1(b)(2).
[212] Cat. 1 piping were not required to follow specific construction standards to avoid retroactive imposition of then-new requirements.
[213] Noncorrodible piping should not be used as on-ground piping as these could melt and cause spills/releases when exposed to fire.
[214] Cathodic protection systems for Cat. 3 piping must be designed, fabricated, and installed in accordance with one of the following: API RP 1632 (January 2006; revised 2002); NACE SP0169-2013 (2013); NACE SP0285-2011 (2011); STI R892 (January 2006).
[215] Certain Cat. 1 piping had constructions/materials different from the first two mentioned above (i.e., FRP, cathodically protected steel); these alternative constructions were grandfathered into the PBS regulations to avoid the retroactive imposition of then-new requirements. These, however, are unique to/acceptable for only Cat. 1 piping.
[216] Compatibility requirements for SP3 UST systems are found in 6 NYCRR paragraph 613-3.1(b)(7) and subdivision 3.2(c). Facilities must have these records when the tank system starts storing petroleum blends higher than E10/B20.
[217] Biofuel blends are identified by the blend's ethanol or biodiesel content by volume.
[218] Tank closure must be performed in accordance with 6 NYCRR subdivision 613-3.5(b).

Installation

Tank system equipment must be installed as designed so they work as intended. UST system components must meet the following installation requirements[219] (as applicable).

<table>
<tr><th rowspan="2">SP3 UST Systems:

Installation Requirements</th><th>Cat. 1 Tank System Components</th><th>Cat. 2 Tank System Components</th><th>Cat. 3 Tank System Components</th></tr>
<tr><td rowspan="2">No requirements specified[220].</td><td>Components must be installed in accordance with:
• the manufacturer’s instructions; AND
• NFPA 30 (1984).</td><td>Components must be installed in accordance with:
• the manufacturer’s instructions; AND
• one of the following[203]:
o API RP 1615 (April 2011);
o NFPA 30 and 30A (2012); or
o PEI RP100 (2011).</td></tr>
<tr><td colspan="2">• Piping in contact with the ground must have been tightness tested[221] (as installed) before being covered/enclosed/placed in use.
• Joints must be liquid-/air-tight.
• Damage to tank coatings was repaired in accordance with the manufacturer’s instructions BEFORE being backfilled.</td></tr>
</table>

Tanks located in an area where the tank may become buoyant due to a rise in the water table, flooding, or accumulation of water (from fire suppression operations), must also have uplift protection. In general:

- Tanks must be located accordingly to take into consideration the local flood stage and anchored properly – or otherwise protected – to prevent movement/flotation and collapse.
- All valves and other openings must either be extended above the maximum flood stage water level or be able to be closed and secured in a locked position in advance of a flood.

For more information on flooding safeguard requirements, see section 2-5.6 of NFPA 30 (1984) (for Cat. 1/2 tanks) and sections 22.14 and 23.14 of NFPA 30 (2012) (for Cat. 3 tanks), as applicable.

Repairs

Any issues with the tank system that could lead to a leak or release must be addressed appropriately to prevent them from occurring.

SP3 Repairs and Modifications	*Leak-Imminent Situations*	*Leak-Probable Situations*
Tank System Issue	• Tank system component(s) is not adequate/tight. • Continuation of an operation/practice will result in a leak.	• Tank system component(s) is malfunctioning or in disrepair, and inaction may lead to a leak. • Continuation of an operation/practice will likely result in a leak unless action is taken.
Required Course of Action *(One of these must be performed as appropriate/necessary.)*	• Operation/practice must be modified or discontinued immediately. • Component(s) must be replaced immediately. • Tank system must be either: o emptied and taken out of service[222] immediately, and repairs (and subsequent testing) must be performed; or o permanently closed[222].	• Operation/practice must be modified or discontinued immediately. • Component(s) must be replaced within 90 days (UNLESS DEC deems a shorter time necessary). • Tank system must be either: o taken out of service[222] immediately, and repairs (and subsequent testing) must be performed; or o permanently closed[222].

[219] Installation requirements for SP3 tank system equipment are found in 6 NYCRR subdivision 613-3.2(a).
[220] Cat. 1 tank systems were not required to meet any installation requirements to avoid retroactive imposition of then-new requirements.
[221] The tightness test must have been performed in accordance with 6 NYCRR paragraph 613-3.3(d)(2).
[222] Tank systems must be either taken out of service or permanently closed in accordance with 6 NYCRR subdivision 3.5(a) or (b), respectively.

Repairs must be permanent, be at least as protective as either the original construction standard(s) or the manufacturer's specifications and meet the following specific requirements[223] (as applicable).

SP3 Component	***SP3 UST Systems: Specific Repair Requirements***	
	Repair ***(must be conducted in accordance with one of the following[203]…)***	***Post-Repair***
Tanks	No standard(s) specified[224] *Note(s):* • Steel tanks must be repaired either with steel welds or steel patches that are welded in place. • FRP tanks must be performed by the manufacturer's authorized representative in accordance with the manufacturer's repair specifications.	• *Perform/Pass:* All of the following, as applicable: ○ Tank tightness testing[225] (0.1 gph), within 30 days after repair, UNLESS the tank is: ▪ internally inspected in accordance with API RP 1631 (June 2001); ▪ monitored for leaks (at least weekly) using one of the following methods[226]: • automatic tank gauging (ATG); • vapor/groundwater monitoring; or • interstitial monitoring. ○ Cathodic protection testing[227] within six months after repair (for cathodically protected steel tanks) ○ Impressed current inspection[227] within 60 days after repair (for cathodically protected steel tanks with impressed current systems) • *Retain (Repair and Post-Repair) Records:* Until the tank system is permanently closed ○ *Send DEC Copies of Tightness Test Results:* Within 30 days after the test is performed
Piping and Fittings	No standard(s) specified[224] *Note(s):* • Metal piping/fittings from which petroleum has leaked cannot be repaired: they must be replaced. • Noncorrodible piping/fittings from which petroleum has leaked may be repaired or replaced. • A new piping run must be installed when 50% (or more) of the piping run (in question) is removed for repair/replacement, UNLESS the piping meets the design and construction requirements for Cat. 3 piping.	• *Perform/Pass:* All of the following as applicable: ○ Line tightness testing[228] (0.1 gph, and 1.5 times the normal operating pressure), within 30 days after repair, UNLESS the piping/fitting is monitored for leaks (at least weekly) using one of the following methods[226]: • vapor/groundwater monitoring; or • interstitial monitoring. ○ Cathodic protection testing[227] within six months after repair (for cathodically protected steel piping and fittings) ○ Impressed current inspection[227] within 60 days after repair (for cathodically protected steel piping and fittings with impressed current systems) • *Retain (Repair and Post-Repair) Records:* Until the tank system is permanently closed ○ *Send DEC Copies of Tightness Test Results:* Within 30 days after the test is performed
Leak Detection Equipment	No standard(s) specified[224] *Note:* repair requirements do not apply to handheld LD equipment.	• *Retain (Repair[229]) Records:* Until three years after repair
Cathodic Protection Systems	No standard(s) specified[224]	• *Perform/Pass:* All of the following (as applicable): ○ Cathodic protection testing[227] within six months after repair ○ Impressed current inspection[227] within 60 days after repair (for impressed current systems) • *Retain (Repair and Post-Repair) Records:* Until the tank system is permanently closed

[223] Repair requirements for SP3 tank systems are found in 6 NYCRR subdivision 613-3.2(j).
[224] These repairs are not required to meet any specific standards, but facilities are advised to follow the equipment manufacturer's standards/specifications.
[225] Tank tightness testing must be performed in accordance with 6 NYCRR paragraph 613-3.3(c)(1).
[226] These LD methods must be performed in accordance with 6 NYCRR paragraphs 613-3.3(c)(2 – 5), as applicable.
[227] CP testing and IC inspections must be performed in accordance with 6 NYCRR paragraphs 613-3.2(i)(2), (3), respectively.
[228] Line tightness testing must be performed in accordance with 6 NYCRR paragraph 613-3.3(d)(2).
[229] Post-repair testing of LD equipment is not required as long as the equipment is shown to be functional after the repair. Nevertheless, facilities are strongly advised to retain repair records until the tank system is permanently closed.

Repair (and post-repair) records must generally have the following information.

	Repair/Post-Repair Records

SP3 Repair Records:
 	
Required Information
	• Tank ID number
	• Identification of the repaired equipment
	• Date(s) of the repair
	• Notes on any spill/release from the repaired equipment
	• Description of the following:
	  ○ Nature of the repair
	  ○ Standard to which the repair was conducted (if necessary)
	  ○ Details regarding the post-repair inspection/testing/monitoring performed to verify that the repair was effective (depending on the type of equipment repaired), including the results, as necessary
	• A signed statement from the person who performed the repair, that the component underwent a repair that is:
	  ○ permanent; and
	  ○ equal to (or more protective than) the standards of original construction or manufacturer's specifications.

Facilities are also advised to keep records as to what prompted the equipment repair/replacement.

Issues

- **Vaulted, Mounded, and Other Visually Accessible Underground Tanks**

  Vaulted, mounded, and other underground tanks that can be visually inspected should be scrutinized for signs of either illegal construction (e.g., riveted steel on Cat. 2/3 tanks) or incompatible construction materials.

- **Piping in Rock Guards**

  Piping in rock guards are considered to be *in contact with the ground*[230], as the rock guard is considered to be a 'material' covering the piping; however, any piping within a rock guard is considered to be noncorrodible piping.

- **Tank System Components Made of Copper or Galvanized Steel (and Other Non-Steel Metals)**

  Modern tank systems rarely have copper or galvanized steel components, but inspectors will run into them occasionally. These components count as metal components that are not inherently corrosion-resistant and thus require cathodic protection (as with cathodically protected steel). The applicable design/construction standards for these components may be fewer than those for steel components, but these non-steel metals are acceptable construction materials (unless there are compatibility issues with the stored petroleum).

- **Bringing Out-of-Service (OOS) SP3 Systems Back into Service**

  A SP3 tank system may be brought back into service after having been legally OOS for 12 months or less.

  An SP3 tank system, however, may not be returned to service if it has been OOS for more than 12 months. These tank systems must be closed and reusing such a tank – at any site – is tantamount to installing a new tank under the PBS regulations. The tank (system) must then meet all standards/requirements for the latest Category (at the time of installation), as certified by the original tank manufacturer as being equivalent to a new tank.

[230] Defined in 6 NYCRR subdivision 613-1.3(ak).

- **Bringing Tank Systems that Underwent a Permanent Closure Back into Service**

  Permanent closure is a one-way street. Permanently closed tank systems may not be brought back into service (like legally out-of-service tank systems), as these are considered to have exited the scope of the PBS regulations. Reusing such tanks – at any location to store petroleum – means re-entering the scope of the PBS regulations as new installations AND meeting all pertinent standards/requirements for the latest Category before use. To this end, facilities can obtain a recertification from either the original tank manufacturer (for shop-fabricated tanks), or from the professional engineer[231] (PE) in charge of rebuilding and/or modifying the tank (for field-fabricated tanks).

- **Using Tank Systems that Previously Stored Non-Petroleum Substances**

  Any tank system – that had never held petroleum – to be used as a PBS tank system, is considered a new installation (i.e., it enters the scope of the PBS regulations). The tank system must then meet – and be proven to meet – all pertinent standards/requirements for the latest Category (as the time it stores petroleum), as certified by the original equipment manufacturer as being equivalent to new components.

- **Changing Subpart Applicability**

  Tank systems may undergo a change (e.g., storing a different type of petroleum, increasing/decreasing the volume of the tank system covered by materials) that results in a change in applicable Subpart. Tank systems in such cases must meet – and be proven to meet – all requirements under the new Subpart prior to the change. (Unless the change involves a physical reinstallation or permanent closure, the tank Category does not change; however, moving the tank may invalidate the design/construction standard listing.)

- **Tank Tilt**

  Tanks were often installed with a tilt prior to use of ethanol-blended gasoline, to funnel water to a specific spot within the tank for easy removal (as gasoline without ethanol extenders were not likely to absorb/interact with water). Installation records – particularly for older tanks – should have this information, as it is often used in the calibration of tank monitoring consoles.

- **Justification for Installation Height of Overfill Prevention Valves**

  Inspectors who encounter tanks with either automatic shutoff valves or ball float valves not set to activate at either 95% or 90% of the design capacity, respectively, should verify that the overfill prevention equipment is installed correctly, by reviewing either the installation records or the delivery records. Installation records should include calculations that justify the alternative actuation height.

- **Check Valve Placement for Suction Piping**

  Facilities are responsible for providing evidence that they have safe suction piping (based on the placement of their check valves) and are therefore exempt from piping leak monitoring. Installation records should have this information and be available at the time of inspection.

[231] This PE must be licensed and registered in New York State (NYS) by the NYS Education Department under Title 8, Article 145 of the Education Law.

Questions

TS_cs	***Does the tank system meet pertinent construction standards?***
Y	» No issues were found under this question.
TC	» *613-3.1(b)(1)(ii) / 3.1(b)(1)(iii):* The tank does not meet applicable design/construction requirements. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to permanently close the tank system within 60 days after the date of the NOV.
XTT [SP3/SP4/SP5]	» Meeting design/construction standards is not required because the tank is a SP3/SP5, Cat. 1 UST.
PC	» *613-3.1(b)(2)(ii) / 3.1(b)(2)(iii):* The piping does not meet applicable design/construction requirements. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to either replace the piping or permanently close the tank system, within 60 days after the date of the NOV.
XTP [SP3/SP4/SP5]	» Meeting design/construction standards is not required because the piping is Cat. 1 piping associated with an SP3/SP5 UST system.
TS_bf	***Is the entire tank system compatible with the stored petroleum?***
Y	» No issues were found under this question.
CI	» *613-3.1(b)(7):* The tank system is not compatible with the stored petroleum. » *Note(s):* Compatibility documentation is the primary evidence that the tank system is compatible with biofuel blends greater than E10/B20; if a tank system component is compatible, but documentation is not being retained at least until tank system closure, Response **NR** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to permanently close the tank system within 60 days after the date of the NOV.
NR	» *613-3.2(c)(2):* Compatibility documentation is not being retained for one or more tank system components, at least until the tank system (storing biofuel blends greater than E10/B20) is permanently closed. » *Note(s):* Compatibility documentation is the primary evidence that the tank system is compatible with biofuel blends greater than E10/B20; if the documentation is missing, the tank system component is likely not compatible (and Response **CI** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either: obtain (and submit) the compatibility documentation; submit a plan to replace the incompatible component(s) with compatible equipment within 90 calendar days after the date of the NOV; or submit a plan to permanently close the tank system within 60 days after the date of the NOV.
XP	» Compatibility documentation is not required because the tank system is not storing a biofuel blend greater than E10/B20.
TS_rat	***If repairs were made, are the repairs appropriate/adequate, and was the equipment tested after the repair?***
Y	» No issues were found under this question.
IN	» *613-3.2(j)(3) – (8):* The repairs made to a tank system component were inappropriate/inadequate. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either: take the tank system out of service and submit a plan to properly repair the tank system component within 90 calendar days after the date of the NOV; or submit a plan to permanently close the tank system within 60 days after the date of the NOV.
NIT	» *613-3.2(j)(9) – (10):* An appropriate inspection/test was not performed for the tank system component after the repair » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a tightness test.
XP	» A tightness test is not required because either the tank system component is being monitored for leaks at least weekly, or the repaired tank was internally inspected following the repair.

Leak Detection

Purpose

Leak detection allows facility staff to monitor tank system equipment for spills and any integrity issues and respond to them immediately to keep spills from growing. This in turn helps decrease the chances of those spills reaching the lands and/or waters of the State (and becoming releases).

Requirements

Leak detection refers to assessment methods/equipment that alert the operator to leaks from – and/or integrity issues with – the tank system, specifically the primary containment[232] (that is in contact with the ground). Facilities must meet the following overall leak detection requirements[233] (as applicable).

SP3 Leak Detection	***Requirements***
General[234]	LD equipment must be: • installed/calibrated in accordance with the manufacturer's instructions (and an acceptable code of practice[235]); • able to detect leaks (with a probability of at least 95% and no more than 5% probability of false alarm) from any portion of both the tank and piping that are in contact with the ground and routinely contain petroleum; and • meets specific requirements. *Note:* LD requirements are suspended for tank systems that are out of service and empty.
Periodic Equipment Inspections	Electronic LD equipment must be inspected for connectivity[236] at least every 30 days.
(Suspected) Spill Reporting	Any monitoring results or alarms indicating that a leak may have occurred is considered a suspected leak that must be reported to the DEC Spill Hotline within a specific timeframe; however, this reporting requirement is waived if certain applicable conditions are met[237].

Recordkeeping	*Retain:*
	• *LD and Equipment Inspection Records:* For three years
	  ○ *Note:* LD records for the last 30 calendar days – either digital or hard copies – must always be accessible at the facility to help inform any DEC/facility staff responding to spills.
	• *Tightness Test Results:* For three years or until the next test, whichever is later
	  ○ *Send DEC copies:* Within 30 days after the test is performed
	• *Schedules of Required Calibration and Maintenance (from the LD equipment manufacturer):* Until five years after the LD equipment installation
	• *Calibration, Maintenance, and Repair[238] Records (for LD equipment permanently located at the facility):* Until three years after completion of servicing work

DEC may require facilities to conduct additional inspections/testing/monitoring if the facility has suspected leaks or inspections/testing/monitoring that have not been performed. Facilities must complete this additional inspection/testing/monitoring within ten days after receipt of the request, or DEC will conduct inspections/testing/monitoring at the facility's expense.

Facilities with inoperative leak detection equipment – especially those that fail the connectivity inspections – must immediately repair/replace/recalibrate the equipment, perform a different type of leak detection valid for their tank/piping, or permanently close the tank system[239] (and update the registration accordingly).

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[232] 6 NYCRR subdivision 613-1.3(bd): *Primary containment* means any tank, piping, or ancillary equipment which, under normal operating conditions, routinely contains petroleum. This generally excludes fill pipes and vent pipes, among others. Leak detection requirements also exclude any aboveground piping (not in contact with the ground) from which a leak is readily visible.
[233] Leak detection requirements for SP3 tank systems are found in 6 NYCRR section 613-3.3.
[234] General LD requirements for SP3 tank systems are found in 6 NYCRR subdivision 613-3.3(a).
[235] See **Installation** on p. 206.
[236] Connectivity inspection requirements for SP3 LD equipment are found in 6 NYCRR subdivision 613-3.2(g).
[237] See **Spills** on p. 460.
[238] See **Repairs** on p. 206.
[239] Tank systems must be permanently closed in accordance with 6 NYCRR subdivision 3.5(b).

Tank and Piping Leak Detection

Except for Cat. 1 tanks storing No. 5/6[240] fuel oil[241], SP3 tanks are required[242] to have (at least) one periodic leak detection method[243] able to detect a leak of 0.2 gph. Facilities must meet the following requirements for specific tank LD methods.

SP3 Tank LD Method	***Cat. 1 Tank***	***Cat. 2 Tank***	***Cat. 3 Tank***

Automatic Tank Gauging [ATG]	• *Perform and Record Results:* Weekly / Continuously
	  ○ *Leak Rate:* 0.2 gph
	• *Inspect for Connectivity:* Every 30 days
	  ○ Tank Monitoring Console
	  ○ Probes
	• *Retain Records:* For three years		

Vapor/ Groundwater Monitoring [VGM]	• *Perform and Record Results:* Weekly / Continuously
	• *Inspect for Connectivity:* Every 30 days
	  ○ Tank Monitoring Console
	  ○ (Well) Sensors
	• *Retain Records:* For three years		

Interstitial Monitoring [INS]	• *Required for:* Double-walled tanks
	• *Perform and Record Results:* Weekly / Continuously
	• *Inspect for Connectivity (as applicable):* Every 30 days
	  ○ Tank Monitoring Console
	  ○ Probes/Sensors
	• *Retain Records:* For three years		

Weep Hole Monitoring [WHM]	• *Acceptable for:* Concrete-encased tanks • *Perform and Record Results:* Weekly • *Retain Records:* For three years		

Tank Tightness Testing [TTT]	• *Perform and Record Results:* Annually
	  ○ *Leak Rate:* 0.1 gph
	• *Retain Records:* For three years or until the next test, whichever is later
	  ○ *Send DEC Copies:* Within 30 days after the test is performed		

[240] ECL Section 19-0329 prohibits the use of No. 6 fuel oil for heating purposes in NYS, starting on July 1, 2023.

[241] Cat. 1 tanks/piping that are part of tank systems storing other petroleum types, may also be exempted from leak detection requirements based on the viscosity of the stored petroleum (if comparable to that of No. 5/6 fuel oil); however, other factors must be considered as well, including (but not limited to) the presence/absence of substances that would either prevent the stored petroleum from solidifying or cause environmental and/or health concerns, if a spill occurred.

[242] Specific LD requirements for SP3 tanks are found in 6 NYCRR paragraph 613-3.3(b)(1).

[243] For Cat. 1 tanks/pressurized piping, facilities may use another LD method not explicitly mentioned in 6 NYCRR subdivision 613-3.3(c)/(d) if: the method is demonstrated to be as effective as those listed/required in the regulations; and DEC approves its use. (DEC is not aware of any other LD methods that meet these criteria at the time of this writing). Inspectors should investigate the registered LD method if listed as “99 – Other”.

Leak detection requirements for SP3 piping[244] (in contact with the ground) are generally split between two very different piping types:

- *Pressurized piping* conveys petroleum under pressure produced by a submersible turbine pump (STP) located at the tank.
    - One submersible turbine pump (STP) can transmit petroleum to multiple dispensers/equipment.
    - Pressurized piping is preferred – and historically more common/cheaper than suction piping – at facilities in the US that have high throughput, due to the STP's ability to provide higher flowrates to more dispensers/equipment.
    - This higher flowrate often magnifies the volume of piping leaks, potentially leading to greater environmental contamination and higher cleanup costs.
- *Suction piping* conveys petroleum under vacuum produced by a suction pump located away from the tank.
    - Each suction line requires a suction pump.
    - Suction piping is commonly limited to facilities with low throughput because suction pumps are not as robust as STPs and can only provide lower flowrates through the dispenser/equipment.
    - Leaks from suction piping are generally smaller in volume compared to those from pressurized piping, leading to less serious environmental contamination (and relatively lower cleanup costs).

Check valves are fitted to suction piping to help the pump hold prime, but the valve placement can minimize the volume of the petroleum released if the piping fails. Safe suction (also known as exempt or European suction) piping has the following attributes:

- Each suction line only has one check valve.
- The check valve is located directly below and as close as practicable to the suction pump.
- The piping is sloped such that its contents will drain back into the (underground) tank if suction is released (i.e., piping fails).
- The piping operates at less than atmospheric pressure.

Suction piping that does not have the above characteristics is non-exempt/American suction piping, which is more prone to larger and more serious environmental contamination than safe suction piping.

SP3 pressurized and non-exempt/American suction piping must have at least one periodic leak detection method[243] (that meets specific requirements), except for:

- Cat. 1 piping that are part of UST systems storing No. 5/6[240] fuel oil[241];
- Cat. 1 piping that meets design/construction standards for Cat. 2/3 piping[245];
- Cat. 2/3 non-exempt/American suction piping; and
- Cat. 2/3 pressurized piping that <u>are not</u> part of UST systems storing motor fuel.

However, all Cat. 2/3 pressurized piping that <u>are</u> part of UST systems storing motor fuel, must be equipped with an automatic line leak detector (ALLD).

[244] Specific LD requirements for SP3 piping are found in 6 NYCRR paragraph 613-3.3(b)(2).
[245] See **<u>Design, Construction, and Compatibility</u>** on p. <u>203</u>.

Facilities must meet the following requirements for specific piping LD methods.

SP3 Piping LD Method	Cat. 1 Piping	Cat. 2 Piping	Cat. 3 Piping

Automatic Line Leak Detector [ALLD]	• *Required for:* Cat. 2/3 pressurized piping that are part of UST systems storing motor fuel
	• *Perform:* Continuously
	  ○ *Leak Rate:* 3 gph (with line pressure at 10 psi within one hour)
	• *Inspect for Connectivity (as applicable):* Every 30 days
	  ○ Tank Monitoring Console
	  ○ Electronic Line Leak Detector (ELLD)
	• *Retain Records:* For three years		

Line Tightness Testing [LTT]	• *Perform and Record Results:* Annually
	  ○ *Leak Rate:* 0.1 gph (at 1.5 times the operating line pressure)
	• *Retain Records:* For three years or until the next test, whichever is later
	  ○ *Send DEC Copies:* Within 30 days after the test is performed		

Vapor/ Groundwater Monitoring [VGM]	• *Perform and Record Results:* Weekly / Continuously
	• *Inspect for Connectivity (as applicable):* Every 30 days
	  ○ Tank Monitoring Console
	  ○ (Well) Sensors
	• *Retain Records:* For three years		

Interstitial Monitoring [INS]	• *Required for:* Cat. 1 piping that are double walled
	• *Perform and Record Results:* Weekly / Continuously
	• *Inspect for Connectivity (as applicable):* Every 30 days
	  ○ Tank Monitoring Console
	  ○ Probes/Sensors
	• *Retain Records:* For three years		

Issues

- **Compartmented Tanks, Siphoned Tanks, and Tanks with Manifolded Piping**

  LD methods must account for any special tank setups. Each compartment in a compartmented tank is treated as a separate tank because petroleum levels in these compartments do not equilibrate or interact in any way – as such, each compartment may need its own leak detection method/equipment (depending on the method/equipment).

  Siphoned tanks (i.e., tanks connected via piping that acts as a siphon) are treated as a single tank as petroleum levels in siphoned tanks equilibrate; however, these tanks must have separate leak detection methods (unless vapor/groundwater monitoring is used). The siphon between these tanks may need to be broken to perform proper leak monitoring, depending on the LD method employed.

  Tanks with manifolded piping (i.e., tanks with piping connected downstream of their respective submersible pumps, supplying a single combined pipe) generally behave like independent tanks: the tank volumes are not combined when in the tanks, and a failure in either tank will not affect the amount of product in the other tank. Depending on the LD method, the tanks and piping may require separate leak detection equipment (e.g., interstitial monitoring), but they may also simply have to be accounted for in the LD method (e.g., automatic line leak detector).

- **Supplemental Leak Detection Methods/Equipment**

  Additional LD methods (beyond what is mandatory) may be utilized, but facilities must include them in the PBS registration (as space allows). These supplementary LD methods must be maintained and operated in accordance with all pertinent leak detection requirements and are also subject to requirements pertaining to (suspected) spill reporting. However, connectivity inspection requirements do not apply to supplementary LD methods.

- **Check Valve Placement for Suction Piping**

  Facilities are responsible for providing evidence that they have safe suction piping (based on the placement of their check valves) and are therefore exempt from piping leak monitoring. Installation records should have this information and be available at the time of inspection.

- **Gravity-Fed/Gravity Return Piping**

  Piping in which petroleum moves by gravity (i.e., gravity-fed/gravity return piping) is generally treated as non-exempt/American suction piping under the leak detection requirements, though they may apply differently depending on the location/type of pump used and the pathway of the spill in case of piping failure. Setups where the spill would drain back into the tank act as safe/European suction piping and are exempt from the leak monitoring requirements; any other piping that has either STPs or suction pumps must comply with requirements for either pressurized or non-exempt suction piping requirements, respectively.

- **Siphon Bars**

  Siphon bars (i.e., piping connecting siphoned tanks) are set up without check valves to allow petroleum to flow both ways in the piping; in addition, petroleum flows at less than atmospheric pressure through the piping, which itself is sloped such that the petroleum drains to one or both tanks in the event of a leak. Siphon bars are then considered to be safe suction piping and not required to have leak detection.

- **Leak Detection for Piping Connected to Satellite Dispensers**

  Dispensers may be configured such that there is no direct connection to the tank; the line feeding these satellite dispensers split off from piping connected to a different dispenser. Piping connected to satellite dispensers are still considered to be part of the tank system and are subject to leak detection requirements.

- **Extent of Weekly Leak Detection Records to be Reviewed**

  Facilities must generally keep the last three years' worth of records at any given time (unless the tank has been in service for less than three years), but inspectors are advised to review at least the last 30 days' worth of weekly leak detection records. Inspectors have the discretion to review more/less records as necessary depending on the facility's compliance history and whether any spills are suspected.

- **Access to the Tank Monitoring Console**

  Inaccessible tank consoles cannot convey alarms to anyone who needs to respond to the alarm/possible spill. The console should not be in a room with restricted access, nor should the space in front of the console be used as storage, as these hamper a staff person's ability to review the console in a timely manner and delays their response to possible/suspected spills.

- **Reviewing Records/Alarms on the Tank Monitoring Console**

  Inspectors, by default, should have the facility staff operate the console to produce the information/records that the inspector wishes to review. Inspectors should step in only when:

  - the facility representative is incapable of operating the console (i.e., is not an operator);
  - the facility representative has given the inspector permission to access the console; AND
  - the inspector has been trained in the use of that specific console make/model.

- **Connectivity Between the Tank Monitoring Console and Probes/Floats/Sensors/ELLDs**

  Tank monitoring consoles and their electronic attachments (for leak detection) are subject to 30-day connectivity inspections to prove that the attachment triggers the necessary alarm on the console accordingly. This requirement can be satisfied in modern consoles by running a built-in sensor status report, which returns a result that says, “All Functions Normal” (or some equivalent language) if the monitoring system has connectivity. Connectivity for older monitoring systems may be proven in accordance with the console manufacturer’s specific instructions.

- **Records Printed on Thermal Paper**

  Tank monitoring consoles normally have printers with thermal paper/ticker tape, and any records on such paper fade over time. Having faded leak detection records is a violation, but these may not warrant penalties and/or a consent order, especially for older records. Facilities are advised to save digital or hard copies of those records (e.g., take pictures/scans/photocopies of the tape, save data onto a digital spreadsheet, maintain the data in the console, copy by hand) to prove compliance with the leak detection requirements.

Questions

LD_trc	***Tank LD Methods: all LD methods that apply to the tank – including those required and any supplementary methods being performed – should be selected.***
ATG	» Automatic Tank Gauging
VGM	» Vapor/Groundwater Monitoring
INS	» Interstitial Monitoring
WHM	» Weep Hole Monitoring
TTT	» Tank Tightness Testing
N	» *613-3.3(a)(1):* The tank is not being monitored for leaks. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid tank leak detection method.
XP	» Leak detection is not required because the tank system is OOS and the (associated) tank is currently empty.
LD_tri	***Is the registered tank LD method(s) accurate?***
Y	» No issues were found under this question.
IN	» *613-1.9(a)(4):* The registered tank leak detection method(s) is inaccurate. » *Note(s):* This Response does not include expired facility registrations, inaccurate facility information, unregistered tanks, or unregistered facilities; such violations should be captured under Question **REG_info**. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must correct the site registration online to reflect the tank leak detection method(s). » *Additional Action(s):* The inspector should note the specific inaccuracy with the tank leak detection under Question **LD_tnov**, to include it in the list of registration discrepancies (in the NOV) that need to be corrected.

LD_tnov	***Which tank LD method(s) should be noted in the NOV?*** ***Note: two methods (maximum) should be selected to be on the registration.***
LD_prc	***Piping LD Methods: all LD methods that apply to the piping – including those required and any supplementary methods being performed – should be selected. Nothing should be selected if there is no piping associated with the tank.***
VGM	» Vapor/Groundwater Monitoring
INS	» Interstitial Monitoring
ALLD	» Automatic Line Leak Detector
LTT	» Line Tightness Testing
N	» *613-3.3(a)(1):* The piping is not being monitored for leaks. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid piping leak detection method.
NLLD	» *613-3.3(b)(2)(i)(a)(1) / 3.3(b)(2)(i)(b) / 3.3(b)(2)(i)(c):* The pressurized piping is not equipped with the required automatic line leak detector. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid ALLD.
XP	» Leak detection is not required because the tank system is OOS and the (associated) tank is currently empty.
XT	» Piping leak detection is not required because there are no corresponding LD requirements.
LD_pri	***Is the registered piping LD method(s) accurate?***
Y	» No issues were found under this question.
IN	» *613-1.9(a)(4):* The registered piping leak detection method(s) is inaccurate. » *Note(s):* This Response does not include expired facility registrations, inaccurate facility information, unregistered tanks, or unregistered facilities; such violations should be captured under Question **REG_info**. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must correct the site registration online to reflect the piping leak detection method(s). » *Additional Action(s):* The inspector should note the specific inaccuracy with the piping leak detection under Question **LD_pnov**, to include it in the list of registration discrepancies (in the NOV) that need to be corrected.
LD_pnov	***Which piping LD method(s) should be noted in the NOV?*** ***Note: two methods (maximum) should be selected to be on the registration.***

Options

Automatic Tank Gauging [ATG]

Automatic tank gauging is a leak detection method that consists of a tank console – connected to an electronic probe with a float – that monitors for leaks by conducting two types of tests based on periodic measurements of petroleum levels within the tank:

- Static tests are similar to manual tank gauging (MTG) tests, where weekly measurements are taken before and after a set period of time (often manufacturer-specific but usually 4-5 hours) when the tank is undisturbed. The console is typically programmed to run this test at night when the facility is closed.
- Continuous In-Tank Leak Detection System (CITLDS) tests continuously measure petroleum levels (and temperatures) in the tank throughout the day, to calculate weekly leak rates. These are preferred for high-throughput facilities that operate 24/7 (e.g., truck stops along well-traveled highways).
    - Continuous Statistical Leak Detection (CSLD) tests gather data when the tank is not dispensing any petroleum.
    - Continual reconciliation tests gather data continuously and performs statistical inventory reconciliation (SIR) in the background.

Tank monitoring consoles must be properly calibrated and be capable of detecting leaks (at the rate of 0.2 gph) from any portion of the tank that routinely contains petroleum[232]; to this end, the tank should be filled (to its working capacity, if possible), particularly before static tests. The National Work Group on Leak Detection Evaluations (NWGLDE) website[246] has a list of console makes/models that detect leaks at the rate of 0.2 gph.

Records for ATG tests must be retained for (at least) three years and have the following information.

SP3 LD Records:	***Automatic Tank Gauging [ATG]***

Required Information	• Tank ID number
	• Tank design capacity
	• Date/time of test
	• Petroleum level within the tank at the time of the test
	• Test results (i.e., pass/fail)
	• Console information:
	  ○ Console make/model
	  ○ Type of test conducted
	  ○ Leak rate (i.e., 0.2 gph)

A leak is suspected when the tank fails the ATG test. These test results must be reported to the Spill Hotline within two hours after discovery, unless:

- one or more of the equipment (i.e., console, probe/float) is found to be defective and is immediately repaired/replaced/recalibrated, AND additional testing does not confirm the initial results; or
- the results were investigated and determined to be a non-spill event (e.g., caused by filling the tank during testing).

The connectivity of tank monitoring consoles and probes/floats must also be inspected on a regular basis. Inspection records must be retained for (at least) three years and have the following information.

SP3 LD Inspections	***Automatic Tank Gauging Equipment***
(30-Day) Connectivity Inspection	• Tank ID number • Date/time of inspection • Verification that the tank monitoring console and the probe/float are communicating with each other • Any issues identified with the criterion above • Description of actions taken to rectify any issues identified

[246] LD equipment manufacturers and testing companies have their products evaluated by a third-party testing company to certify – per the testing protocol created by EPA – that the equipment/test method detects certain leak rates; the manufacturer receives the results of the evaluation and then sends it to the National Work Group on Leak Detection Evaluations (NWGLDE) for inclusion in their website's list of certified equipment/test methods.

Issues

- **Proper Calibration of the Tank Monitoring Console**

  Performing ATG leak tests is possible only when the console is calibrated properly. Inspectors are advised to check that the information regarding the tank as stored in the console, matches the information in the installation records – discrepancies with the tank dimensions (or even tank tilt) is a strong indicator that the results of the leak tests are not accurate.

- **Ports for Tank Level Sensors**

  ATG tank level sensors may be located either in the tank-top sump or directly above the center of the tank. In the latter case, the sensor should have a dedicated access port labeled with 'No Fill' to indicate that it is not the fill pipe.

Questions

ATG_val	***Is this LD method valid for the tank system?***
Y	» No issues were found under this question.
NV	» *613-3.3(b)(1):* Automatic tank gauging is not a valid leak detection method for the tank (and there are no other valid leak detection methods in use). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid leak detection method.
ST ***[SP2/SP3/SP5]***	» *613-3.3(c)(2)(i):* The automatic tank gauging system cannot be shown to meet standards. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a tank tightness test within 30 calendar days after the date of the NOV.
SM	» Automatic tank gauging either is not required for the tank or supplements a different LD method that is being used to meet leak detection requirements.
ATG_ld	***Is the LD method being performed periodically?***
Y	» No issues were found under this question.
NL ***[SP2/SP3/SP5]***	» *613-3.3(b)(1)(i)(b) / 3.3(b)(1)(ii):* Automatic tank gauging is not being performed. » *Note(s):* Test records are the primary evidence that automatic tank gauging is being performed; if tank gauging is being performed, but either the tests are not being recorded or records are not being retained for at least three years, Response **NR** under Question **ATG_ldr** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the records/results of) four weekly leak tests, or install/utilize (and submit documentation of) a valid leak detection method.
PL ***[SP2/SP3/SP5]***	» *613-3.3(b)(1)(i)(b) / 3.3(b)(1)(ii):* Automatic tank gauging is not being performed at least weekly. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the records/results of) four weekly leak tests, or install/utilize (and submit documentation of) a valid leak detection method. » *Additional Action(s):* There is no need for the curative measure if the most recent weekly leak test was performed but a previous one was not; this violation, however, should still be cited.

ATG_ldr	***Are the LD records being retained?*** ***Note: records must be retained for 3 years.***
Y	» No issues were found under this question.
NR ***[SP2/SP3/SP5]***	» *613-3.3(e)(1):* Leak tests are not being recorded, or records are not being retained for at least three years. » *Note(s):* Test records are the primary evidence that automatic tank gauging is being performed; if the records are missing, tank gauging is likely not being performed (and Response **NL** under Question **ATG_ld** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records/results of the last four weekly leak tests, or perform (and submit the records/results of) four weekly leak tests.
ATG_gwo	***Is the equipment in good working order?***
Y	» No issues were found under this question.
IM ***[SP2/SP3/SP5]***	» *613-3.3(c)(2)(ii):* The automatic tank gauging system is not set up correctly to conduct leak tests (e.g., using an incorrect tank capacity or dimensions), or leak tests are not being performed for the appropriate duration. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must properly calibrate the automatic tank gauging system and perform (and submit the records/results of) three weekly leak tests with the corrected setup.
PLL ***[SP2/SP3/SP5]***	» *613-3.3(c)(2)(i):* Leak tests are being performed when the petroleum level in the tank is lower than what is routinely stored. » *Note(s):* Test records should be reviewed to determine petroleum levels when the tests were performed. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must program the automatic tank gauging system to perform leak tests when the tank is filled (to its normal levels), and perform (and submit the records/results of) leak tests at these levels. » *Additional Action(s):* Tests should be conducted as soon as possible after deliveries; if the tank receives infrequent deliveries, the inspector should review records for tests performed when the tank had its highest levels of petroleum.
O	» *613-1.12 / 3.3(c)(2)(ii):* The automatic tank gauging system is inoperable. » *Note(s):* The automatic tank gauging system is considered inoperable if any of the following is true: - the probe/float is malfunctioning; - the console is shown to be defective or unpowered; or - the console and the probe/float do not have a connection, per the latest results of the monthly connectivity inspections (for SP2/SP3/SP5 UST systems). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must repair or replace the automatic tank gauging system, and submit documentation proving that the system has been repaired/replaced and that weekly leak tests are being conducted. » *Additional Action(s):* Automatic tank gauging is likely not being performed if the system is inoperable (see Question **ATG_ld**, Response **NL**).
NX	» *613-1.4(b):* The automatic tank gauging system could not be accessed for inspection (e.g., the console is in a locked room). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must submit documentation showing that the automatic tank gauging system is present and in good working order/properly configured. » *Additional Action(s):* The inspector should perform a follow-up inspection to confirm that the automatic tank gauging system is set up properly and that leak tests are being performed.

ATG_itm	***Is the equipment being inspected periodically?*** ***Note: connectivity inspections are required for all UST systems [SP2/SP3/SP5].***
Y	» No issues were found under this question.
NC ***[SP2/SP3/SP5]***	» *613-3.2(g)(1):* Connectivity inspections are not being performed for the automatic tank gauging system. » *Note(s):* Inspection records are the primary evidence that connectivity inspections are being performed; if inspections are being performed, but either the inspections are not being recorded or records are not being retained for at least three years, Response **NRC** under Question **ATG_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) a connectivity inspection.
PC ***[SP2/SP3/SP5]***	» *613-3.2(g)(1):* Connectivity inspections are not being performed for the automatic tank gauging system at least every 30 days. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) a connectivity inspection.
ATG_rec	***Are the equipment inspection records being retained?*** ***Note: records must be retained for 3 years.***
Y	» No issues were found under this question.
NRC ***[SP2/SP3/SP5]***	» *613-3.2(g)(1) / 3.2(g)(3):* Connectivity inspections are not being recorded, or records are not being retained for at least three years. » *Note(s):* Inspection records are the primary evidence that connectivity inspections are being performed; if the records are missing, inspections are likely not being performed (and Response **NC** under Question **ATG_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records of the last three connectivity inspections, or perform (and submit the records of) a connectivity inspection.

Vapor/Groundwater Monitoring [VGM]

Vapor monitoring and groundwater monitoring are forms of leak detection where wells within the tank excavation are monitored to detect petroleum contamination – in the form of hydrocarbon vapors and free product – in case of equipment failure.

Vapor and groundwater monitoring are poor methods of leak detection. Leaks are not commonly detected in real time as either method is often performed weekly (though continuous electronic monitoring exists if rarely used). Both are also often used for old tank systems with no enclosed form of secondary containment (i.e., double-wall construction or impermeable liners in the excavation zone, possibly with cut-off walls), which means that leaks are not detected until they have become releases. Vapor and groundwater monitoring are still valid forms of leak detection for certain tanks and piping, but facilities are highly discouraged from using them.

A site assessment must be performed prior to utilizing these leak detection methods, to establish the following (as applicable).

	Vapor Monitoring	***Groundwater Monitoring***
SP3 LD Records: ***Required Site Assessment Information***	• Backfill materials to be used are sufficiently porous (such that vapors can readily reach the monitoring wells) • Petroleum (or a constituent/tracer compound) stored in the tank system is volatile enough to be detectable at the monitoring well • Groundwater/rainfall/soil moisture and other factors do not affect the vapor monitoring equipment such that a leak is undetected for more than seven days • Background contamination will not affect the monitoring for vapors • Number/positioning of wells necessary to detect leaks (from the tank system component being monitored) within the excavation zone	• Petroleum stored is immiscible in water, and has a specific gravity of less than 1 • Groundwater is never more than 20’ away from the ground surface • The slotted portion of the monitoring well must be designed to prevent migration of natural soils/filter pack into the well, and allow entry of petroleum on the water table into the well (under both high and low groundwater conditions) • Backfill materials to be used are sufficiently porous such that the hydraulic conductivity of the materials between the monitoring wells and the tank system component being monitored, is at least 0.01 cm/s • Monitoring wells are sealed from the ground surface to the top of the filter pack • Monitoring wells/equipment are either within the excavation zone or is as close to it as possible • Number/positioning of wells necessary to detect leaks (from the tank system component being monitored) within the excavation zone

VGM records must also be retained for at least three years and have the following information.

	Vapor Monitoring	***Groundwater Monitoring***
SP3 LD Records: ***Required Information***	• Tank ID number • Date/time of sampling • Type of petroleum (and constituent/tracer compound if necessary) stored in the tank system • Type of equipment used – must be designed/operated to detect any increases in vapor concentrations above the background levels, as attributed to petroleum type (or constituent/tracer compound) leaking from the tank system component being monitored • Monitoring well(s) sampled • Vapor/tracer concentration measured • Sampling results (i.e., was the measured concentration greater than the background levels indicated on the site assessment report)	• Tank ID number • Date/time of sampling • Type of petroleum stored in the tank system • Type of equipment used – must be able to detect at least 1/8” of petroleum on top of groundwater in the wells • Monitoring well(s) sampled • Sampling results (i.e., was at least 1/8” of petroleum found in the groundwater)

A leak is suspected when the sampling results indicate either:

- an increase in vapor concentration over background levels; or
- the presence of petroleum in the groundwater.

These sampling results must be reported to the Spill Hotline within two hours after discovery unless the monitoring equipment is found to be defective and is immediately repaired/replaced/recalibrated, AND additional monitoring does not confirm the initial results. However, there are situations where the presence of petroleum in a monitoring well is evidence of a release and must be reported to the Spill Hotline as such within two hours after discovery (and corrective action must begin in accordance with 6 NYCRR Subpart 613-7).

The connectivity of (any) tank monitoring consoles and well sensors must also be inspected on a regular basis. Inspection records must be retained for (at least) three years and have the following information.

SP3 LD Inspections	***Vapor/Groundwater Monitoring Equipment***
(30-Day) Connectivity Inspection	• Tank ID number • Date/time of inspection • Verification (as necessary) that the tank monitoring console and the well sensors are communicating with each other • Any issues identified with the criterion above • Description of actions taken to rectify any issues identified

Issues

- **Monitoring Wells Marked and Secured**

  Inspectors should verify that monitoring wells are both marked and sealed. Lids to monitoring wells must be labeled with a black triangle on a white background (or simply labeled as such). The lid should also be secured to avoid surface water intrusion and unauthorized access, particularly deliveries that could occur if the well were mistaken for a fill port.

- **Demonstration of Manual Vapor/Groundwater Monitoring**

  Inspectors should ask operators to demonstrate their monitoring method/routine (particularly ones using handheld sampling equipment) to verify that the wells are being sampled appropriately.

  Facilities also cannot claim to perform manual groundwater monitoring just by looking into a monitoring well, as it is difficult to differentiate between water and petroleum within. Groundwater samples must be pulled out of the well (using a bailer) before a determination can be made.

- **Position of Groundwater Monitoring Screen Relative to Water Table**

  The screen of a groundwater well must bridge the water table; if the screen is always above or below the water table, it will not collect petroleum (and will not indicate groundwater contamination).

Questions

VGM_val	***Is this LD method valid for the tank system?***
Y	» No issues were found under this question.
NVT	» 613-3.3(b)(1): Vapor/groundwater monitoring is not a valid leak detection method for the tank (and there are no other valid leak detection methods in use). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid leak detection method.
SMT	» Vapor/groundwater monitoring either is not required for the tank or supplements a different LD method that is being used to meet leak detection requirements.
NVP	» 613-3.3(b)(2): Vapor/groundwater monitoring is not a valid leak detection method for the piping (and there are no other valid leak detection methods in use). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid leak detection method.
SMP	» Vapor/groundwater monitoring either is not required for the piping or supplements a different LD method that is being used to meet leak detection requirements.

VGM_ld	Is the LD method being performed periodically?
Y	» No issues were found under this question.
NLT [SP2/SP3/SP5]	» 613-3.3(b)(1)(i)(b) / 3.3(b)(1)(ii): Vapor/groundwater monitoring is not being performed for the tank. » *Note(s):* Sampling records are the primary evidence that vapor/groundwater monitoring is being performed; if monitoring is being performed, but either sampling is not being recorded or records are not being retained for at least three years, Response **NR** under Question **VGM_ldr** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the records of) four weekly samplings, or install/utilize (and submit documentation of) a valid leak detection method.
PLT [SP2/SP3/SP5]	» 613-3.3(b)(1)(i)(b) / 3.3(b)(1)(ii): Vapor/groundwater monitoring is not being performed for the tank at least weekly. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the records of) four weekly samplings, or install/utilize (and submit documentation of) a valid leak detection method. » *Additional Action(s):* There is no need for the curative measure if the most recent weekly sampling was performed but a previous one was not; this violation, however, should still be cited.
NLP [SP2/SP3/SP5]	» 613-3.3(b)(2)(i)(a)(3): Vapor/groundwater monitoring is not being performed for the piping. » *Note(s):* Sampling records are the primary evidence that vapor/groundwater monitoring is being performed; if monitoring is being performed, but either sampling is not being recorded or records are not being retained for at least three years, Response **NR** under Question **VGM_ldr** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the records of) four weekly samplings, or install/utilize (and submit documentation of) a valid leak detection method.
PLP [SP2/SP3/SP5]	» 613-3.3(b)(2)(i)(a)(3): Vapor/groundwater monitoring is not being performed for the piping at least weekly. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the records of) four weekly samplings, or install/utilize (and submit documentation of) a valid leak detection method. » *Additional Action(s):* There is no need for the curative measure if the most recent weekly sampling was performed but a previous one was not; this violation, however, should still be cited.
VGM_ldr	**Are the LD records being retained?** ***Note: records must be retained for 3 years.***
Y	» No issues were found under this question.
NR [SP2/SP3/SP5]	» 613-3.3(e)(1): Vapor/groundwater monitoring is not being recorded, or records are not being retained for at least three years. » *Note(s):* Sampling records are the primary evidence that vapor/groundwater monitoring is being performed; if the records are missing, monitoring is likely not being performed (and Response **NLT**/**NLP** under Question **VGM_ld** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records of the last four weekly samplings, or perform (and submit the records of) four weekly samplings.

VGM_gwo	***Is the equipment in good working order?*** ***Note: answering this question is not necessary if the site assessment report is missing - Question VGM_mis should be answered instead.***
Y	» No issues were found under this question.
WDT ***[SP2/SP3/SP5]***	» 613-3.3(c)(3)(vi) / 3.3(c)(4)(vii): The site assessment report does not indicate that the wells either meet all design standards or will detect leaks from all portions of the tank system. » *Note(s):* Note that Responses **GWT** or **VWT** should be selected instead if either response better describes individual issues found with the wells. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a tank tightness test within 30 calendar days after the date of the NOV.
GWT ***[SP2/SP3/SP5]***	» 613-3.3(c)(4)(ii): The site assessment report does not indicate that groundwater is either always detectable within the groundwater wells or never more than 20’ from the ground surface. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a tank tightness test within 30 calendar days after the date of the NOV.
VWT ***[SP2/SP3/SP5]***	» 613-3.3(c)(3)(iii): The site assessment report does not indicate that the vapor monitoring wells are never affected by groundwater, rainfall, soil moisture, etc. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a tank tightness test within 30 calendar days after the date of the NOV.
WDP ***[SP2/SP3/SP5]***	» 613-3.3(c)(3)(vi) / 3.3(c)(4)(vii): The site assessment report does not indicate that the wells either meet all design standards or will detect leaks from all portions of the tank system. » *Note(s):* Note that Responses **GWP** or **VWP** should be selected instead if either response better describes individual issues found with the wells. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a line tightness test within 30 calendar days after the date of the NOV.
GWP ***[SP2/SP3/SP5]***	» 613-3.3(c)(4)(ii): The site assessment report does not indicate that groundwater is either always detectable within the groundwater wells or never more than 20’ from the ground surface. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a line tightness test within 30 calendar days after the date of the NOV.
VWP ***[SP2/SP3/SP5]***	» 613-3.3(c)(3)(iii): The site assessment report does not indicate that the vapor monitoring wells are never affected by groundwater, rainfall, soil moisture, etc. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a line tightness test within 30 calendar days after the date of the NOV.

VGM_itm	***Is the equipment being inspected periodically?*** ***Note: connectivity inspections are required for all UST systems [SP2/SP3/SP5].***
Y	» No issues were found under this question.
NC ***[SP2/SP3/SP5]***	» 613-3.2(g)(1): Connectivity inspections are not being performed for the vapor/groundwater monitoring system. » *Note(s):* Inspection records are the primary evidence that connectivity inspections are being performed; if inspections are being performed, but either the inspections are not being recorded or records are not being retained for at least three years, Response **NRC** under Question **VGM_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) a connectivity inspection.
PC ***[SP2/SP3/SP5]***	» 613-3.2(g)(1): Connectivity inspections are not being performed for the vapor/groundwater monitoring system at least every 30 days. Within 30 calendar days after the date of the NOV, perform (and submit the records of) a connectivity inspection.: Connectivity inspections are not being performed for the vapor/groundwater monitoring system at least every 30 days. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) a connectivity inspection.
XPC ***[SP2/SP3/SP5]***	» Connectivity inspections are not required because vapor/groundwater monitoring is performed with non-electronic equipment.
VGM_rec	***Are the equipment inspection records being retained?*** ***Note: records must be retained for 3 years.***
Y	» No issues were found under this question.
NRC ***[SP2/SP3/SP5]***	» 613-3.2(g)(1) / 3.2(g)(3): Connectivity inspections are not being recorded, or records are not being retained for at least three years. » *Note(s):* Inspection records are the primary evidence that connectivity inspections are being performed; if the records are missing, inspections are likely not being performed (and Response **NC** under Question **VGM_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records of the last three connectivity inspections, or perform (and submit the records of) a connectivity inspection.
VGM_mis	***Are there any other observed violations?***
SAT ***[SP2/SP3/SP5]***	» 613-3.3(c)(3)(vi) / 3.3(c)(4)(vii): A site assessment was not performed for the (tank) excavation zone prior to the use of vapor/groundwater monitoring. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform a site assessment and submit a copy of the report. » *Additional Action(s):* If the assessment report indicates that the monitoring wells do not meet standards, another form of leak detection will need to be utilized.
SAP ***[SP2/SP3/SP5]***	» 613-3.3(c)(3)(vi) / 3.3(c)(4)(vii): A site assessment was not performed for the (piping) excavation zone prior to the use of vapor/groundwater monitoring. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform a site assessment and submit a copy of the report. » *Additional Action(s):* If the assessment report indicates that the monitoring wells do not meet standards, another form of leak detection will need to be utilized.

Interstitial Monitoring [INS]

Interstitial monitoring is a form of leak detection that monitors the space (i.e., interstice) between two impermeable layers. This commonly[247] refers to leak monitoring for double-walled tank system components (i.e., tank, piping), where leaks from the primary containment are captured in the interstice between the primary and secondary walls of the equipment. The interstice is monitored either:

- manually, using either water-finding paste and a gauging stick, or a level/pressure gauge, on a weekly basis; or
- electronically, with sensors connected to a tank console, providing continuous monitoring.

This leak detection method became the industry standard with the rise of double-walled equipment, which is much easier to install and monitor for leaks than equipment that is not inherently secondarily contained. Interstitial monitoring is also one of the few methods that detects leaks before they become releases.

INS records must be retained for (at least) three years and have the following information.

Interstice Type	***SP3 LD Records: Required Information (for Interstitial Monitoring)***
Double-Walled Tanks	
Vacuum/ Pressurized Interstice	• Tank ID number • Date/time of monitoring • Monitoring results (i.e., did vacuum level change) • Net change in vacuum level (if any)
Dry Interstice[248] *(Filled with air)*	• Tank ID number • Date/time of monitoring • Monitoring results (i.e., were liquids found) • Inches of fluid (if any) • Notes on spill content (i.e., was it all petroleum or all water, how much of each was found, etc.)
Wet Interstice *(Filled with a brine solution)*	• Tank ID number • Date/time of monitoring • Monitoring results (i.e., was there a change in brine level and is it within the allowable range, was petroleum found) • Net change in brine level (in inches, if any)
Double-Walled Piping	
Piping Interstice + Containment Sump	• Tank ID number • Date/time of monitoring • Monitoring results (i.e., were liquids found) • Inches of fluid (if any) • Notes on spill content (i.e., was it all petroleum or all water, how much of each was found, etc.)

A leak is suspected when the interstitial monitoring results indicate:

- a decrease in vacuum levels (for vacuum interstices);
- a change in brine levels (for wet interstices); or
- the presence of petroleum/water in the dry interstice or the piping interstice/containment sump.

[247] Monitoring wells placed within an excavation zone with an impermeable liner also count as interstitial monitoring (for single-walled tanks), but such setups are rare.

[248] Manual monitoring of dry interstices can only be performed for tanks that have specific testing ports for interstitial monitoring, either at the end of a steel tank or in the middle of a fiberglass-reinforced plastic tank.

Either of the first two scenarios must be reported to the Spill Hotline within two hours after discovery, unless the monitoring equipment is found to be defective and is immediately repaired/replaced/recalibrated, and additional monitoring does not confirm the initial results. The third scenario must be reported to the Spill Hotline within two hours after discovery, unless:

- the primary containment (i.e., tank or piping) is found to be defective but not leaking, and is immediately repaired/replaced following interstitial monitoring; and
- one of the following is true:
    - the monitoring equipment is found to be defective and is immediately repaired/replaced/recalibrated, and additional monitoring does not confirm the initial results; or
    - the results were investigated and determined to be a non-spill event (e.g., caused by filling the tank during testing).

The connectivity of (any) tank monitoring consoles, interstitial/sump sensors, and vacuum pumps/pressure gauges must also be inspected on a regular basis. Inspection records must be retained for (at least) three years and have the following information.

SP3 LD Inspections	***Interstitial Monitoring Equipment***
(30-Day) Connectivity Inspection	• Tank ID number • Date/time of inspection • Verification (as necessary) that the tank monitoring console and the interstitial/sump sensors are communicating with each other • Any issues identified with the criterion above • Description of actions taken to rectify any issues identified

Issues

- **Demonstration of Manual Interstitial Monitoring**

  Inspectors should ask operators to demonstrate their manual interstitial monitoring method/routine (particularly for tank interstices) to verify that the double-walled component is being monitored for leaks appropriately.

- **Liquid(s) Observed through Interstitial Monitoring**

  The presence of petroleum in the secondary containment (e.g., containment sump) often – though not always – indicates an integrity issue with the primary/inner wall of the double-walled component. Likewise, the presence of water may indicate an issue with the secondary/outer wall.

Questions

INS_val	***Is this LD method valid for the tank system?***
Y	» No issues were found under this question.
NVT	» *613-3.3(b)(1):* Interstitial monitoring is not a valid leak detection method for the tank (and there are no other valid leak detection methods in use). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid leak detection method.
SMT	» Interstitial monitoring either is not required for the tank or supplements a different LD method that is being used to meet leak detection requirements.
NVP	» *613-3.3(b)(2):* Interstitial monitoring is not a valid leak detection method for the piping (and there are no other valid leak detection methods in use). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid leak detection method.
SMP	» Interstitial monitoring either is not required for the piping or supplements a different LD method that is being used to meet leak detection requirements.

INS_Id	Is the LD method being performed periodically?
Y	» No issues were found under this question.
NLT **[SP2/SP3/SP5]**	» *613-3.3(b)(1)(i)(b) / 3.3(b)(1)(ii) / 3.3(b)(1)(iii):* Interstitial monitoring is not being performed for the tank. » *Note(s):* Monitoring records are the primary evidence that interstitial monitoring is being performed; if monitoring is being performed, but either the monitoring is not being recorded or records are not being retained for at least three years, Response **NR** under Question **INS_Idr** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) interstitial monitoring for four weeks.
PLT **[SP2/SP3/SP5]**	» *613-3.3(b)(1)(i)(b) / 3.3(b)(1)(ii) / 3.3(b)(1)(iii):* Interstitial monitoring is not being performed for the tank at least weekly. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) interstitial monitoring for four weeks. » *Additional Action(s):* There is no need for the curative measure if the most recent weekly monitoring was performed but a previous one was not; this violation, however, should still be cited.
NLP **[SP2/SP3/SP5]**	» *613-3.3(b)(2)(i)(a)(3):* Interstitial monitoring is not being performed for the piping. » *Note(s):* Monitoring records are the primary evidence that interstitial monitoring is being performed; if monitoring is being performed, but either the monitoring is not being recorded or records are not being retained for at least three years, Response **NR** under Question **INS_Idr** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) interstitial monitoring for four weeks.
PLP **[SP2/SP3/SP5]**	» *613-3.3(b)(2)(i)(a)(3):* Interstitial monitoring is not being performed for the piping at least weekly. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) interstitial monitoring for four weeks. » *Additional Action(s):* There is no need for the curative measure if the most recent weekly monitoring was performed but a previous one was not; this violation, however, should still be cited.
INS_Idr	**Are the LD records being retained?** ***Note: records must be retained for 3 years.***
Y	» No issues were found under this question.
NR **[SP2/SP3/SP5]**	» *613-3.3(e)(1):* Interstitial monitoring is not being recorded, or records are not being retained for at least three years. » *Note(s):* Monitoring records are the primary evidence that interstitial monitoring is being performed; if the records are missing, interstitial monitoring is likely not being performed (and Response **NLT**/**NLP** under Question **INS_Id** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the monitoring records for the last four weeks, or perform (and submit the records of) interstitial monitoring for four weeks.

INS_gwo	Is the equipment in good working order?
Y	» No issues were found under this question.
NXT	» *613-1.4(b):* The (tank) interstitial monitoring equipment could not be accessed for inspection. » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must submit documentation showing that the monitoring equipment is present and in good working order. » *Additional Action(s):* The inspector should conduct a follow-up inspection (where possible) to observe the electronic equipment rather than rely on installation documentation or photographs from the facility.
SO	» *613-1.12 / 3.3(a)(1)(i) – (ii):* The monitoring equipment is inoperable. » *Note(s):* The monitoring equipment is considered inoperable if any of the following is true: - the sensor is malfunctioning; - the tank monitoring console is shown to be defective or unpowered; or - the console and the sensor do not have a connection, per the latest results of the monthly connectivity inspections (for SP2/SP3/SP5 UST systems). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a work plan for the facility to repair or replace the inoperable equipment within 60 days after the date of the NOV.
8M	» *613-1.12:* The interstitial monitoring equipment is not accurate to 1/8". » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must submit documentation showing that equipment capable of accurate measurement is in use.
SSP **[SP2/SP3/SP5]**	» *613-3.3(a)(1)(i) – (ii):* The sump sensor is positioned such that it would not detect a leak if one were to occur. » *Note(s):* Common scenarios include sensors located away from/above the lowest point of the sump (where contained liquids would pool), and sensors not placed vertically (e.g., horizontally, upside-down). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must fix the positioning of the sump sensor and submit a photograph showing the properly repositioned sensor.
NXP	» *613-1.4(b):* The (piping) interstitial monitoring equipment could not be accessed for inspection. » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must submit documentation showing that the monitoring equipment is present and in good working order. » *Additional Action(s):* The inspector should conduct a follow-up inspection (where possible) to observe the electronic equipment rather than rely on installation documentation or photographs from the facility.
INS_itm	**Is the equipment being inspected periodically?** ***Note: connectivity inspections are required for all UST systems [SP2/SP3/SP5].***
Y	» No issues were found under this question.
NC **[SP2/SP3/SP5]**	» *613-3.2(g)(1):* Connectivity inspections are not being performed for the interstitial monitoring system. » *Note(s):* Inspection records are the primary evidence that connectivity inspections are being performed; if inspections are being performed, but either the inspections are not being recorded or records are not being retained for at least three years, Response **NRC** under Question **INS_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) a connectivity inspection.
PC **[SP2/SP3/SP5]**	» *613-3.2(g)(1):* Connectivity inspections are not being performed for the interstitial monitoring system at least every 30 days. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) a connectivity inspection.
XPC **[SP2/SP3/SP5]**	» Connectivity inspections are not required because interstitial monitoring is performed with non-electronic equipment.

INS_rec	***Are the equipment inspection records being retained?*** ***Note: records must be retained for 3 years.***
Y	» No issues were found under this question.
NRC ***[SP2/SP3/SP5]***	» *613-3.2(g)(1) / 3.2(g)(3):* Connectivity inspections are not being recorded, or records are not being retained for at least three years. » *Note(s):* Inspection records are the primary evidence that connectivity inspections are being performed; if the records are missing, inspections are likely not being performed (and Response **NC** under Question **INS_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records of the last three connectivity inspections, or perform (and submit the records of) a connectivity inspection.

Weep Hole Monitoring [WHM]

Weep holes are a rudimentary form of interstitial monitoring, built onto field-applied concrete encasements (on the tank exterior) to allow operators to visually monitor the integrity of the tank without direct access to the tank exterior itself. The concrete encasement acts as pseudo-secondary containment that directs any leaks from the tank to the weep holes at the base of the tank/encasement.

Field-applied concrete encasements are prone to integrity issues, mostly because the encasement often does not cover all sides of the tank. Spills from the bottom of the tank could become releases without going through the weep holes; as such, weep holes have limited validity as a form of leak detection and facilities are highly discouraged from using them.

WHM records must be retained for (at least) three years and have the following information.

SP3 LD Records: ***Required Information***	***Weep Hole Monitoring [WHM]***

	• Tank ID number
	• Date/time of monitoring
	• Weep hole information:
	  ○ Location (relative to the tank)
	  ○ Verification that the weep hole was unobstructed
	  ○ Test results (i.e., was a spill observed at the weep hole)
	• Any relevant notes regarding the condition of the concrete encasement, and the surroundings of the tank

A leak is suspected when a spill is observed at a weep hole. These monitoring results must be reported to the Spill Hotline within two hours after discovery.

Questions

WHM_val	***Is this LD method valid for the tank system?*** ***Note: weep hole monitoring is a valid (primary) LD method only for SP3 (or SP5), Cat. 1 USTs/UST systems.***
Y	» No issues were found under this question.
NV	» *613-3.3(b)(1):* Weep hole monitoring is not a valid leak detection method for the tank (and there are no other valid leak detection methods in use). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid leak detection method.
SM	» Weep hole monitoring either is not required for the tank or supplements a different LD method that is being used to meet leak detection requirements.
WHM_ld	***Is the LD method being performed periodically?***
Y	» No issues were found under this question.
NL ***[SP3/SP5]***	» *613-3.3(b)(1)(i)(c):* Weep hole monitoring is not being performed. » *Note(s):* Monitoring records are the primary evidence that weep hole monitoring is being performed; if monitoring is being performed, but either the monitoring is not being recorded or records are not being retained for at least three years, Response **NR** under Question **WHM_ldr** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the records of) weep hole monitoring for four weeks, or install/utilize (and submit documentation of) a valid leak detection method.
PL ***[SP3/SP5]***	» *613-3.3(b)(1)(i)(c):* Weep hole monitoring is not being performed at least weekly. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the records of) weep hole monitoring for four weeks, or install/utilize (and submit documentation of) a valid leak detection method. » *Additional Action(s):* There is no need for the curative measure if the most recent weekly monitoring was performed but a previous one was not; this violation, however, should still be cited.

WHM_ldr	***Are the LD records being retained?*** ***Note: records must be retained for 3 years.***
Y	» No issues were found under this question.
NR ***[SP3/SP5]***	» *613-3.3(e)(1):* Weep hole monitoring is not being recorded, or records are not being retained for at least three years. » *Note(s):* Monitoring records are the primary evidence that weep hole monitoring is being performed; if the records are missing, weep hole monitoring is likely not being performed (and Response **NL** under Question **WHM_ld** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the monitoring records for the last four weeks, or perform (and submit the records of) weep hole monitoring for four weeks.
WHM_gwo	***Is the equipment in good working order?***
Y	» No issues were found under this question.
NV ***[SP3/SP5]***	» *613-3.3(c)(6):* The weep holes are not visible to an observer. » *Note(s):* A spill may still be observed through the weep holes, but it may not be readily identified during weekly monitoring because the weep holes are either visually obstructed/covered by materials or inaccessible. » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must either (for visually obstructed weep holes) remove all obstructions in the area and submit a photograph showing the cleared area, or (for inaccessible weep holes) within 30 calendar days after the date of the NOV, submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a tank tightness test within 30 calendar days after the date of the NOV. » *Additional Action(s):* Weep holes are likely not being monitored if the weep holes are either visually obstructed or inaccessible (see Question **WHM_ld**, Response **NL**).
OB	» *613-1.12 / 3.3(c)(6):* The weep holes are either temporarily blocked or permanently obstructed, and leaks would not be observed through the weep hole. » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must either unclog the temporarily blocked weep holes and submit a photograph showing the cleared weep hole, or (for permanently obstructed weep holes) within 30 calendar days after the date of the NOV, submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a tank tightness test within 30 calendar days after the date of the NOV. » *Additional Action(s):* Weep holes are likely not being monitored if the weep holes are either blocked or obstructed (see Question **WHM_ld**, Response **NL**).

Tightness Testing (for tanks/piping) [TTT/LTT]

Tightness testing refers to a spectrum of test methods designed to determine whether a specific component (i.e., tank, piping) has integrity.

Acceptable tank tightness testing methods generally fall under (one or more of) the following categories:

- *Volumetric test methods* involve applying (positive) pressure to the tank, and measuring any changes to liquid (i.e., petroleum) levels within the tank over time.
    - *Overfill test methods*, as the name implies, are performed for tanks that are overfilled.
    - *Underfill test methods* are performed for tanks that are only partly full.
- *Non-volumetric test methods* determine leaks using principles that generally do not involve measuring changes in liquid levels within the tank.
    - *Tracer test methods* involves adding a small amount of a tracer compound (e.g., helium or some other stable chemical marker) to the contents of the tank, then measuring tracer concentrations outside the primary containment.
    - *Ullage test methods* specifically examine the empty space above the stored liquid (i.e., the ullage)
    - *Vacuum test methods* involve applying (negative) pressure to the tank, then measuring any changes to the internal pressure over time.

Tightness testing is a poor form of leak detection. Leaks are not commonly detected in real time as the test is only conducted periodically by a technician[249], which means that leaks can continue to grow – and even become releases – in between tests. Failed tightness test results also do not always equate to leaking equipment, as non-wetted portions of the tank system component can also cause the failed results. Tightness testing is still a valid leak detection method for certain tanks and piping, but facilities are highly discouraged from using them.

The following illustrates the differences between tightness testing performed for tanks and piping.

SP3 Leak Detection:	***Tank Tightness Testing [TTT]***	***Line Tightness Testing [LTT]***

Differences between Tightness Testing Methods	• *Acceptable for:* Cat. 1 tanks
	• *Perform and Record Results:* Annually
	  ○ *Leak Rate:* 0.1 gph
		• *Acceptable for:* Cat. 1 piping
		• *Perform and Record Results:* Annually
		  ○ *Leak Rate:* 0.1 gph (at 1.5 times the operating line pressure)

The National Work Group on Leak Detection Evaluations (NWGLDE) website[246] has a list of acceptable line testing methods that meet the requirements above.

[249] Technicians must be certified by the tightness testing equipment manufacturer/company.

Tightness testing reports must be retained for (at least) three years or until the next test, whichever is later. (Copies must be forwarded to the Regional DEC office within 30 days after the test is performed.) These reports must have the following information.

	Tank Tightness Testing [TTT] and Line Tightness Testing [LTT]

SP3 LD Records:
 	
Required Information
	• Tank ID number
	• Type of petroleum stored
	• Date/time of testing
	• Tightness test method performed
	• Type of component test (e.g., tank, pressurized/suction piping, etc.)
	• Leak threshold (in gallons per hour)
	• Measured leak rate (in gallons per hour)
	• A statement from the technician that the test detects leaks for the component (at specified rates/operating pressures), as required
	• Technician's information:
	  ○ Testing credentials
	  ○ Testing company name/address
	  ○ Name/signature
	• Test results (i.e., pass/fail), including all applicable calculations that contributed to the results
	• Any relevant notes regarding the test, the component being tested, the tank system/facility, etc.

A leak is suspected when the tank system component fails the tightness test. Failed test results must be reported to the Spill Hotline within two hours after discovery.

Issues

- **Electronic Line Leak Detectors (ELLDs) Used for Line Tightness Testing**

  Some commercial ELLDs can be used in lieu of line tightness testing if capable of performing a test equivalent to a line tightness test. ELLDs connected to an appropriate tank console must be certified, programmed, and calibrated to test for 0.1-gph leaks at 1.5 times the normal operating pressure[250], annually. The records must also then specify the ELLD (and tank monitoring console) model used.

  Failed results of the (equivalent) 0.1-gph leak test must be reported to the Spill Hotline – as a suspected leak – within two hours after discovery, unless:

  - the ELLD is found to be defective and is repaired/replaced/recalibrated, AND additional monitoring does not confirm the initial results; or
  - the results were investigated and determined to be a non-spill event (e.g., caused by dispensing from the tank during testing).

  The ELLD is also subject to connectivity inspections.

- **Tightness Testing in Accordance with 6 NYCRR Section 613-3.3**

  Copies of any tightness test that must be performed in accordance with 6 NYCRR Section 613-3.3 – even if not required as a periodic leak detection method – must still be forwarded to the Regional DEC office within 30 days after the test.

[250] The NWGLDE website has a list of ALLDs that meet this requirement.

Questions

TTT	***Tank Tightness Testing***
TTT_val	***Is this LD method valid for the tank system?*** ***Note: tank tightness testing is a required (tank) LD method for certain SP3, Cat. 1 USTs. See 613-3.3(b)(1)(i) for exemptions.***
Y	» No issues were found under this question.
NV	» *613-3.3(b)(1):* Tank tightness testing is not a valid leak detection method for the tank (and there are no other valid leak detection methods in use). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid leak detection method.
NW	» *613-3.3(c)(1)(i):* The tank tightness testing method cannot be shown to meet standards. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a tank tightness test within 30 calendar days after the date of the NOV.
SM	» Tank tightness testing either is not required for the tank or supplements a different LD method that is being used to meet leak detection requirements.
TTT_ld	***Is the LD method being performed periodically?***
Y	» No issues were found under this question.
NL ***[SP3/SP4/SP5]***	» *613-3.3(b)(1)(i):* Tank tightness testing is not being performed for the tank. » *Note(s):* Test results are the primary evidence that tightness testing is being performed; if testing is being performed, but either a copy of the test results was not submitted to the DEC within 30 days after the test, or test results are not being retained for the required minimum duration, Response **NR** or **NS** under Question **TTT_ldr** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the results of) a tank tightness test, or install/utilize (and submit documentation of) a valid leak detection method.
PL ***[SP3/SP4/SP5]***	» *613-3.3(b)(1)(i):* Tank tightness testing is not being performed for the tank at least annually. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the results of) a tank tightness test, or install/utilize (and submit documentation of) a valid leak detection method. » *Additional Action(s):* There is no need for the curative measure if the most recent annual tightness test was performed but a previous one was not; this violation, however, should still be cited.

TTT_ldr	***Are the LD records being retained?*** ***Note: records must be retained for 3 years or until the next test, whichever is later.***
Y	» No issues were found under this question.
NR ***[SP3/SP4/SP5]***	» *613-3.3(e)(2):* Tank tightness test results are not being retained (for the tank) for at least three years or until the next test (whichever is later). » *Note(s):* Test results are the primary evidence that tightness testing is being performed; if test results cannot be produced AND copies were not submitted to the DEC within 30 days after the test, tightness testing is likely not being performed (and Response **NL** under Question **TTT_ld** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the results of the last test, or perform (and submit the results of) a tank tightness test.
NS ***[SP3/SP4/SP5]***	» *613-3.3(e)(3):* A copy of the tank tightness test results was not submitted to the DEC within 30 days after the test was performed. » *Note(s):* Test results are the primary evidence that tightness testing is being performed; if test results cannot be produced AND copies were not submitted to the DEC within 30 days after the test, tightness testing is likely not being performed (and Response **NL** under Question **TTT_ld** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the results of the last test, or perform (and submit the results of) a tank tightness test.
TTT_ldc	***Was the testing complete/adequate?***
Y	» No issues were found under this question.
IN ***[SP3/SP4/SP5]***	» *613-3.3(e)(2):* The tank tightness test results do not have all of the required information. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a tank tightness test and include all required information.
QT ***[SP3/SP4/SP5]***	» *613-3.3(c)(1)(ii):* The tank tightness test was not performed by a qualified technician. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a tank tightness test.

LTT	Line Tightness Testing
LTT_val	**Is this LD method valid for the tank system?** **Note: line tightness testing is a valid (piping) LD method only for certain piping Categories/pumping methods.**
Y	» No issues were found under this question.
NV	» *613-3.3(b)(2):* Line tightness testing is not a valid leak detection method for the piping (and there are no other valid leak detection methods in use). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid leak detection method.
NW	» *613-3.3(d)(2)(i):* The line tightness testing method cannot be shown to meet standards. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a line tightness test within 30 calendar days after the date of the NOV.
SM	» Line tightness testing either is not required for the piping or supplements a different LD method that is being used to meet leak detection requirements.
LTT_ld	**Is the LD method being performed periodically?**
Y	» No issues were found under this question.
NLPP	» *613-3.3(b)(2)(i)(a)(2):* Line tightness testing is not being performed for the pressurized piping. » *Note(s):* Test results are the primary evidence that tightness testing is being performed; if testing is being performed, but either a copy of the test results was not submitted to the DEC within 30 days after the test, or test results are not being retained for the required minimum duration, Response **NR** or **NS** under Question **LTT_ldr** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the results of) a line tightness test, or install/utilize (and submit documentation of) a valid leak detection method.
PLPP	» *613-3.3(b)(2)(i)(a)(2):* Line tightness testing is not being performed for the pressurized piping at least annually. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the results of) a line tightness test, or install/utilize (and submit documentation of) a valid leak detection method. » *Additional Action(s):* There is no need for the curative measure if the most recent annual tightness test was performed but a previous one was not; this violation, however, should still be cited.
NLSP	» *613-3.3(b)(2)(ii)(a):* Line tightness testing is not being performed for (non-exempt) suction piping. » *Note(s):* Test results are the primary evidence that tightness testing is being performed; if testing is being performed, but either a copy of the test results was not submitted to the DEC within 30 days after the test, or test results are not being retained for the required minimum duration, Response **NR** or **NS** under Question **LTT_ldr** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the results of) a line tightness test, or install/utilize (and submit documentation of) a valid leak detection method.
PLSP	» *613-3.3(b)(2)(ii)(a):* Line tightness testing is not being performed for (non-exempt) suction piping at least annually. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the results of) a line tightness test, or install/utilize (and submit documentation of) a valid leak detection method. » *Additional Action(s):* There is no need for the curative measure if the most recent annual/triennial tightness test was performed but a previous one was not; this violation, however, should still be cited.

LTT_ldr	***Are the LD records being retained?*** ***Note: records must be retained for 3 years or until the next test (whichever is later) for piping that is part of a SP2/SP3 (or SP5) UST system.***
Y	» No issues were found under this question.
NR	» *613-3.3(e)(2):* Line tightness test results are not being retained for at least three years or until the next test (whichever is later). » *Note(s):* Test results are the primary evidence that tightness testing is being performed; if test results cannot be produced AND copies were not submitted to the DEC within 30 days after the test, tightness testing is likely not being performed (and Response **NLPP**/**NLSP** under Question **LTT_ld** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the results of the last test, or perform (and submit the results of) a line tightness test.
NS	» *613-3.3(e)(3):* A copy of the line tightness test results was not submitted to the DEC within 30 days after the test was performed. » *Note(s):* Test results are the primary evidence that tightness testing is being performed; if test results cannot be produced AND copies were not submitted to the DEC within 30 days after the test, tightness testing is likely not being performed (and Response **NLPP**/**NLSP** under Question **LTT_ld** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the results of the last test, or perform (and submit the results of) a line tightness test.
LTT_ldc	***Was the testing complete/adequate?***
Y	» No issues were found under this question.
IN	» *613-3.3(e)(2):* The line tightness test results do not have all of the required information. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a line tightness test and include all required information.
QT	» *613-3.3(d)(2)(ii):* The line tightness test was not performed by a qualified technician. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a line tightness test.

Automatic Line Leak Detector [ALLD]

Automatic line leak detectors (ALLDs) are in-line devices that monitor for leaks based on losses in piping pressure. There are two types of ALLDs:

- *Electronic line leak detectors (ELLDs)* use sensors connected to a tank monitoring console that monitors the pressure downstream of the valve when the submersible turbine pump (STP) is on; a leak in the piping translates to a lower line pressure, which then causes the ELLD to stop flow through the piping.
- *Mechanical line leak detectors (MLLDs)* are pressure-actuated valves designed to only allow petroleum to flow if the line pressure downstream of the valve builds up when the STP is on; a leak in the piping prevents this build-up in pressure, which causes the MLLD to restrict – not stop – flow through the piping.

Both types of ALLDs are often screwed onto the top of the STP but can be differentiated by the presence of copper tubing on MLLDs (as opposed to electrical wiring – if any – on ELLDs). ELLDs also cause audible and/or visual alarms (often on the tank console) when tripped, whereas MLLDs do not. Either type of ALLD should not be separate from the STP as ALLDs can only detect leaks downstream from it – any measurable piping segment between the STP and the ALLD would not have leak detection.

ALLDs must be able to detect 3-gph leaks at a line pressure of 10 psi within one hour. The National Work Group on Leak Detection Evaluations (NWGLDE) website has a list of ALLDs that meet this requirement.

The connectivity of (any) tank monitoring consoles and ELLDs must also be inspected on a regular basis. Inspection records must be retained for (at least) three years and have the following information.

SP3 LD Inspections	***Electronic Line Leak Detector (ELLD)***
(30-Day) Connectivity Inspection	• Tank ID number • Date/time of inspection • Verification that the tank monitoring console and the electronic line leak detector (ELLD) are communicating with each other • Any issues identified with the criterion above • Description of actions taken to rectify any issues identified

Failed ALLDs must be replaced (as repairing it is nearly impossible), but a tripped ALLD signifies a suspected leak. Activated ALLDs must be reported to the Spill Hotline within two hours after discovery, unless:

- the ALLD is found to be defective and is immediately repaired/replaced/recalibrated, AND additional monitoring does not confirm the initial results; or
- the results were investigated and determined to be a non-spill event (e.g., from a power surge).

Facilities are advised to keep a running history of all activations of the ALLD, which includes the date/time of activation, what caused it, and what was done to address it.

ELLDs are also subject to connectivity inspections.

Issues

- **Weather Changes Affecting MLLDs**

  MLLDs can be tripped when the temperature of the petroleum (in the piping) drops with the weather. Low temperatures cause petroleum to contract, causing a drop in the line pressure, which in turn trips the MLLD. Such cases must be treated as suspected leaks unless the facility can definitively prove that the MLLD was tripped solely due to weather conditions.

- **Tampering with ALLDs**

  ALLDs are sometimes tampered with. Inspectors should look at the ALLD itself in the tank-top sump for evidence of tampering or other factors which might interfere with its ability to actuate. (The parts of the ALLD that stop the flow of petroleum could have been taken out, for example, leaving the shell screwed onto the STP to give the appearance of having a functional ALLD.) Inspectors are advised to review the functionality test if there is reason to doubt its ability to detect leaks. They can also ask the operator to operate the tank monitoring console and show that the ELLD is not in alarm.

- **ALLDs on Siphoned/Manifolded Tanks**

  Specific tank configurations warrant the right number, type, and placement of ALLDs to properly perform leak detection of the piping connecting these tanks.

  Siphoned tanks in series must have one ALLD at the STP of the master/primary tank; the siphon bar connecting the tanks is considered to be safe suction piping that does not require leak detection.

  Siphoned tanks in parallel and manifolded tanks must have only one ALLD – an ELLD – placed as far upstream as possible to detect leaks from all piping both upstream and downstream of the manifold, provided that there are no valves (e.g., check valves, solenoid valves) that isolate any portion of the manifolded piping. This ELLD must also be capable of shutting down the STPs if a leak is detected. Such configurations must not have two ALLDs (at the STPs of both tanks) because doing so prevents either ALLD from detecting 3-gph leaks (i.e., the smallest leak that either ALLD can detect are 6-gph leaks).

  Inspectors are advised to check the type and locations of all ALLDs particularly for these tank configurations.

- **ALLD Placement Relative to the Solenoid/Anti-Siphon Valve**

  Solenoid/anti-siphon valves and ALLDs may be fitted to the same piping, but ALLDs will only work when downstream of the solenoid/anti-siphon valve. This means that the ALLD must be separate from the STP (i.e., fitted onto the piping separately) such that petroleum goes through the STP first, then the solenoid/anti-siphon valve, then the ALLD.

- **ALLDs on Tanks with Multiple Pressurized Lines**

  Some tanks are fitted with multiple STPs/pressurized lines (that are not manifolded anywhere downstream of the tank); each line must have its own ALLD.

Questions

ALLD_val	***Is this LD method valid for the tank system?*** ***Note: ALLDs are valid only for pressurized piping that is part of certain tank systems.***
Y	» No issues were found under this question.
NV	» *613-3.3(b)(2):* Automatic line leak detector is not a valid leak detection method for the piping (and there are no other valid leak detection methods in use). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid leak detection method.
NW	» *613-3.3(d)(1):* The automatic line leak detector cannot be shown to meet standards. » *Note(s):* This Response also includes any automatic line leak detector that is not designed for the petroleum stored in the tank system. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a line tightness test within 30 calendar days after the date of the NOV.

ALLD_gwo	***Is the equipment in good working order?***
Y	» No issues were found under this question.
AI	» *613-3.3(a)(1)(i):* The automatic line leak detector is positioned such that it would not detect a leak (from the downstream piping) if one were to occur. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either install an additional automatic line leak detector(s) or reinstall the existing ALLD such that entire piping system is monitored for leaks by the ALLD(s), and submit documentation that the ALLD(s) is properly installed relative to the piping configuration.
AO	» *613-1.12 / 3.3(a)(1)(i) – (ii):* The automatic line leak detector is inoperable. » *Note(s):* The automatic line leak detector is considered inoperable if any of the following is true: - the ALLD is malfunctioning; - the ALLD is shown to be damaged or unpowered; - the console and the ELLD do not have a connection, per the latest results of the monthly connectivity inspections (for SP2/SP3/SP5 UST systems); - the ALLD is not able to detect 3-gph leaks at 10 psi; or - the ALLD is placed incorrectly along the piping such that the ALLD cannot detect leaks from all portions of the piping. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must repair or replace (and submit repair/replacement documentation for) the automatic line leak detector.
NX	» *613-1.4(b):* The automatic line leak detector could not be accessed for inspection. » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must submit documentation that the automatic line leak detector is present and in good working order/properly installed.
ALLD_itm	***Is the equipment being inspected periodically?*** ***Note: connectivity inspections are required for all UST systems [SP2/SP3/SP5].***
Y	» No issues were found under this question.
NC [SP2/SP3/SP5]	» *613-3.2(g)(1):* Connectivity inspections are not being performed for the automatic line leak detector. » *Note(s):* Inspection records are the primary evidence that connectivity inspections are being performed; if inspections are being performed, but either the inspections are not being recorded or records are not being retained for at least three years, Response **NRC** under Question **ALLD_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) a connectivity inspection.
PC [SP2/SP3/SP5]	» *613-3.2(g)(1):* Connectivity inspections are not being performed for the automatic line leak detector at least every 30 days. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) a connectivity inspection.
XPC [SP2/SP3/SP5]	» Connectivity inspections are not required because the automatic line leak detector is non-electronic.
ALLD_rec	***Are the equipment inspection records being retained?*** ***Note: records must be retained for 3 years (for pressurized piping that is part of SP2/SP3/SP5 UST systems).***
Y	» No issues were found under this question.
NRC [SP2/SP3/SP5]	» *613-3.2(g)(1) / 3.2(g)(3):* Connectivity inspections are not being recorded, or records are not being retained for at least three years. » *Note(s):* Inspection records are the primary evidence that connectivity inspections are being performed; if the records are missing, inspections are likely not being performed (and Response **NC** under Question **ALLD_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records of the last three connectivity inspections, or perform (and submit the records of) a connectivity inspection.

Secondary Containment

Purpose

Secondary containment acts as the last line of defense in the event of a spill from any portion of the tank system that routinely contains petroleum. This is particularly important with regards to tank system components (i.e., tank, piping/ancillary equipment) in contact with the ground and dispensers, as portions of these equipment may not be readily visible to an operator, and petroleum may leak – and reach the lands and/or waters of the State (i.e., become a release) – through these nonvisible areas.

Requirements

Secondary containment refers to equipment/structures external to the primary containment[251] (that is in contact with the ground), with the express purpose of containing spills and preventing releases before the operator is made aware of and addresses the spill and any possible equipment failure. Facilities must meet the following overall secondary containment requirements[252] (as applicable).

SP3 Secondary Containment	***Requirements***
General	SC equipment must be: • installed in accordance with the manufacturer's instructions (and an acceptable code of practice[253]); • able to contain leaks from the primary containment (until detected and remediated); and • prevent releases.
(Suspected) Spill Reporting	The unexplained presence of water/petroleum in the interstice of a double-walled sump is considered a suspected leak that must be reported to the Spill Hotline within two hours after discovery[254].

DEC may require facilities to conduct additional inspections/testing/monitoring if the facility has suspected leaks or inspections/testing/monitoring that have not been performed. Facilities must complete this additional inspection/testing/monitoring within ten days after receipt of the request, or DEC will conduct inspections/testing/monitoring at the facility's expense.

[251] 6 NYCRR subdivision 613-1.3(bd): *Primary containment* means any tank, piping, or ancillary equipment which, under normal operating conditions, routinely contains petroleum. This generally excludes fill pipes and vent pipes, among others. Secondary containment requirements also exclude any aboveground piping (not in contact with the ground) from which a leak is readily visible.
[252] Secondary containment requirements for SP3 tank systems are found in 6 NYCRR paragraph 613-3.1(b)(1).
[253] See **Installation** on p. 206.
[254] See **Spills** on p. 460.

Tank Secondary Containment

Tanks must utilize one of the following forms of secondary containment and meet applicable requirements[255].

Secondary Containment: SP3 Tanks	***Cat. 1 Tank[256]***	***Cat. 2 Tank***	***Cat. 3 Tank***
Double-Wall (DW) Construction	Any form of secondary containment acceptable for Cat. 2 or 3 tanks	*Designed and Constructed:* In accordance with: • any Cat. 3 standards; or • the performance standards in 6 NYCRR subclause 613-3.1(b)(1)(ii)(*e*)(*2*)(*i*)	*Designed and Constructed:* In accordance with one of the following[257]: • *Fiberglass-Reinforced Plastic (FRP) Tanks:* ○ UL 1316 (January 1994) ○ UL 1856 (June 2020) • *Cathodically Protected Steel Tanks:* ○ STI F841 (January 2006) ○ UL 58 (December 1996) ○ UL 1746 (January 2007) • *Clad/Jacketed Steel Tanks:* ○ STI F922 (January 2013) ○ UL 58 (December 1996) ○ UL 1746 (January 2007) • *Tanks in Inaccessible Areas:* ○ UL 80 (September 2007) ○ UL 142 (December 2006) ○ ULC-S601-07 (2007)
Vaults		*Designed and Constructed:* In accordance with performance standards in 6 NYCRR subclause 613-3.1(b)(1)(ii)(*e*)(*2*)(*i*)	*Designed and Constructed:* In accordance with performance standards in 6 NYCRR subclause 613-3.1(b)(1)(iii)(*e*)(*3*)(*ii*)
Cut-Off Walls		*Designed and Constructed:* In accordance with performance standards in 6 NYCRR subclause 613-3.1(b)(1)(ii)(*e*)(*2*)(*iii*)	
Impervious Underlayment		*Designed and Constructed:* In accordance with performance standards in 6 NYCRR subclause 613-3.1(b)(1)(ii)(*e*)(*2*)(*iv*)	
No Secondary Containment Required	No standard(s) specified		

[255] Specific SC standards/requirements for SP3 tanks are found in 6 NYCRR clauses 613-3.1(b)(1)(ii)(*e*) & (iii)(*e*).
[256] Cat. 1 tanks were not required to meet secondary containment requirements to avoid retroactive imposition of then-new requirements.
[257] Facilities may also comply with a code of practice developed by a nationally recognized association or independent testing laboratory and approved by the DEC.

Questions

SC_trc	***Tank SC Equipment: all SC equipment that apply to the tank – including those required and any supplementary equipment installed – should be selected.***
DWU	» Double-Walled (UST) Construction
VIA	» (Inaccessible) Vault
SL	» Synthetic Liner
EL	» Excavation Liner
IA	» Remote Impounding Area
IU	» Impervious Underlayment
O	» Other
NU ***[SP2/SP3/SP5]***	» *613-3.1(b)(1)(ii)(e) / 3.1(b)(1)(iii)(e):* The tank is not equipped with the required secondary containment. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to permanently close the tank system within 60 days after the date of the NOV.
XTU ***[SP2/SP3/SP5]***	» Tank secondary containment is not required because the tank is a Cat. 1 UST.
SC_tri	***Is the registered tank SC equipment accurate?***
Y	» No issues were found under this question.
IN	» *613-1.9(a)(4):* The registered tank secondary containment is inaccurate. » *Note(s):* This Response does not include expired facility registrations, inaccurate facility information, unregistered tanks, or unregistered facilities; such violations should be captured under Question **REG_info**. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must correct the site registration online to reflect the tank secondary containment. » *Additional Action(s):* The inspector should note the specific inaccuracy with the tank secondary containment under Question **SC_tnov**, to include it in the list of registration discrepancies (in the NOV) that need to be corrected.
SC_tnov	***Which tank SC equipment should be noted in the NOV?***
SC_val	***Is the equipment valid for the tank system?***
Y	» No issues were found under this question.
NVU ***[SP2/SP3/SP5]***	» *613-3.1(b)(1)(ii)(e)(2) / 3.1(b)(1)(iii)(e)(2) / 3.1(b)(1)(iii)(e)(3):* The form of secondary containment is not valid for the tank (and there are no other valid forms of secondary containment in use). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to permanently close the tank system within 60 days after the date of the NOV.

SC_gwo	Is the equipment in good working order?
Y	» No issues were found under this question.
LIU ***[SP2/SP3/SP5]***	» *613-1.12 / 3.1(b)(1)(ii)(e)(1) / 3.1(b)(1)(iii)(e)(1):* The tank secondary containment lacks integrity/is not liquid-tight. » *Note(s):* Evidence of integrity issues (for double-walled tank system components) includes: - presence of water (in the interstice); and - failed weekly interstitial monitoring results. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to permanently close the tank system within 60 days after the date of the NOV.
LIP	» *613-1.12:* The piping secondary containment – excluding any sumps – lacks integrity/is not liquid-tight. » *Note(s):* Evidence of integrity issues (for double-walled tank system components) includes: - presence of water (in the interstice); and - failed weekly interstitial monitoring results. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to either repair or replace the compromised piping (with double-walled piping) within 60 days after the date of the NOV.
LIC	» *613-1.12:* The (non-UDC) containment sump lacks integrity or is not liquid-tight on its sides, bottom, and/or penetrations. » *Note(s):* Evidence of integrity issues includes visible cracking and degradation. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to either repair or replace (and submit repair/replacement documentation for) the containment sump within 60 days after the date of the NOV.
WDC	» *613-1.12:* The (non-UDC) containment sump contains water and/or debris. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must clean the containment sump to be free of all liquids and debris, and submit a photograph showing the cleaned sump. » *Additional Action(s):* The presence of water within the sump is an unusual operating condition (i.e., a suspected spill) which the facility must investigate to determine how water is entering the sump and if it is escaping after being exposed to the potentially contaminated insides of the sump.
LID	» *613-1.12:* The under-dispenser containment lacks integrity or is not liquid-tight on its sides, bottom, and/or penetrations. » *Note(s):* Evidence of integrity issues includes visible cracking and degradation. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to either repair or replace (and submit repair/replacement documentation for) the UDC within 60 days after the date of the NOV.
WDD	» *613-1.12:* The under-dispenser containment contains water and/or debris. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must clean the UDC to be free of all liquids and debris, and submit a photograph showing the cleaned UDC. » *Additional Action(s):* The presence of water within the UDC is an unusual operating condition (i.e., a suspected spill) which the facility must investigate to determine how water is entering the UDC and if it is escaping after being exposed to the potentially contaminated insides of the UDC.

Options

Double-Wall (DW) Construction

Double-wall construction refers to tanks/piping within another tank/piping. The primary component holds the petroleum (i.e., primary containment), while the outer component encapsulates the inner component. Between the two components is the interstitial space – also known as the annular space – into which spills (from the primary component) drain.

- Tank interstices are often accessible via tank-top ports and are monitored for leaks[258] either manually (using a pop-up indicator or a gauging stick) or electronically (with interstitial sensors connected to a tank monitoring console).
    - *Vacuum and pressurized interstices* are sealed and charged with either slightly negative or positive pressure, respectively: interstitial monitoring notes any change to the default pressure level.
    - *Dry interstices* are filled with air: interstitial monitoring notes the presence of liquids.
    - *Wet interstices* are filled with a brine solution: interstitial monitoring notes any change to the brine level.
- Piping interstices often lead to a containment sump – double-walled piping must be sloped such that spills to the interstice are conveyed (via a rubber piping boot) to the sump, where the leak collects until discovered. The sump is monitored for leaks[258] either manually or electronically (i.e., with a sensor placed at the lowest point of the sump).
    - To allow liquids to flow from the secondary piping to the sump, the boot must either be pulled back from the sump wall or have an open and unobstructed valve/port facing the floor of the sump. In the latter case, flexible piping often features a Schrader valve, while fiberglass piping can have either a Schrader valve or a hard-piped termination fitting with a threaded port.
        - Except during testing of the secondary piping, the valve core (poppet) inside the Schrader valve must be removed for leak detection.
        - Threaded ports may have test valves which can be left open for leak detection without removing the core; otherwise, the valve core must be removed.

The relative ease of installation, a small excavation footprint, and the near-immediate leak detection feedback, all make double-wall construction the industry standard for tank and piping secondary containment.

Facilities that utilize double-wall construction to comply with SC requirements must be able to prove the following regarding the design/construction of the DW component:

- For DW tanks, the secondary tank must sufficiently cover the primary tank and have integrity. Both qualities are crucial to catching spills from the primary tank and can be proven by complying with referenced standards (as applicable).
    - Tanks with dry interstices must also be sloped such that leaks are detectable from the monitoring port.
- For DW piping, the piping must be sloped such that leaks from the primary piping will flow to and pool in a location (i.e., containment sump) that is monitored periodically.

Installation records should include information on these.

[258] See **Interstitial Monitoring [INS]** on p. 227.

Issues

- **Single-Walled Tanks Retrofitted with Internal Linings with an Interstitial Space**

  Certain tank linings provide an interstitial space that can be monitored for leaks (e.g., ZCL Phoenix System, Petrofuse Four-Coat Tank Lining) and were commonly retrofitted to single-walled tanks in the late 1980s/early 1990s. Such lining system retrofits, however, does not classify the tank as double-walled: the completed lining is not a self-supporting structure (as it relies on the single-walled tank for structural support) and thus cannot be considered a tank wall.

- **Presence/Condition of the Piping Boot**

  Piping boots are not strictly required in the PBS regulations but are crucial for testing the integrity of both the sump and the double-walled piping (at the time of installation). The piping boot's condition often indicate tightness issues (i.e., how did petroleum reach the boot, how frequently has this happened) and/or incompatibility between the petroleum stored and the boot material. Inspectors who observe degraded boots should investigate the reason for the condition of the boot.

- **Connection Between the Sump and the Piping Boot**

  Contractors working on any equipment in the sump or testing the sump may, at times, make the mistake of leaving the sump sealed off from the interstice of the double-walled piping (especially when testing the sump's integrity). Operators should be alert to this possibility (particularly when doing rounds of the facility) and rectify this situation immediately.

- **Piping in Rock Guards**

  Piping in rock guards are considered to be *in contact with the ground*[259], as the rock guard is considered to be a 'material' covering the piping. Any single-walled piping within a rock guard is not necessarily secondarily contained as rock guards are primarily installed for the purpose of convenience (when installing/reinstalling piping), not containment.

[259] Defined in 6 NYCRR subdivision 613-1.3(ak).

Containment Sumps and Under-Dispenser Containment (UDC)

Containment sumps are liquid-tight containers often placed around pumps, piping joints/connections, ancillary equipment, and other related components, with the purpose of containing spills during normal tank system operation and replacement of any equipment within. There are three general types:

- *Tank-top sumps* are located at the top of an underground tank and allow access to the submersible turbine pump (STP), solenoid/anti-siphon valves, operating valves, and any other equipment typically placed at the beginning (i.e., the most upstream point) of a piping run.
- *Transition sumps* are located at the middle of a piping run, often to allow access to connecting equipment between piping segments (and on rare occasion, pumps).
- *Dispenser sumps (or under-dispenser containment/UDCs)* are located beneath a dispenser, often to allow access to both the dispenser and any equipment connecting it to the buried piping (i.e., check/shear valves, risers, connectors, other transitional components beneath the dispenser, etc.)
    - UDCs are often rectangular/cuboid where tank-top and transition sumps are often cylindrical.
    - Dispenser sumps are also necessary when piping interstitial monitoring is being performed AND spills to the secondary piping have the potential to flow towards the dispenser and not the tank (e.g., a mountainside UST system where the tank is at a higher elevation than the dispenser).

Containment sumps are typically single-walled, but they may also be double-walled with interstice types like those of DW tanks.

Double-walled piping is often sloped to convey spill to a containment sump for leak monitoring. As such, the sump must be kept free of liquids, debris, and other miscellaneous objects (e.g., oil filters) which may reduce its containment capacity.

Sumps must also be kept in good working order. A leak is suspected when water/petroleum is found in the interstice of a double-walled sump, and the presence of water/petroleum cannot be explained. This unusual operating condition must be reported to the Spill Hotline within two hours after discovery.

Issues

- **Damaged Sumps**

  Inspectors should visually confirm that the containment sump has integrity – any holes, leaky perforations, or cracks signify a lack of tightness – but also that the operator did the same. As such, inspectors should ask operators for their assessment of the sump, especially when damaged.

- **(Evidence of the) Presence of Petroleum**

  Residue found in the containment sump typically indicates a prior spill (and subsequent removal of free product) which, when coupled with apparent integrity issues, means that petroleum was likely released to the lands and/or waters of the State. The inspector should then verify that this (suspected) leak was reported to the Spill Hotline.

- **Steel Under-Dispenser Containment**

  Some of the first under-dispenser containment products made commercially available in the 1990s was made from steel. These are not specifically required to have cathodic protection but are still susceptible to corrosion. Such UDCs are rarely used anymore, but inspectors that encounter them are advised to check for any signs of corrosion (that need to be addressed).

Vaults

A vault is a field-fabricated enclosure of impervious walls – commonly made of concrete – which completely surround a tank, much like a small room. Access to vaults are typically limited (if not entirely nonexistent) and/or considered confined space entry, rendering the enclosed tanks as inaccessible for a physical inspection of the tank exterior (i.e., the tank is in an *inaccessible area*, and thus considered to be underground).

Vaults used as secondary containment must be liquid-tight – drains, weep holes, and other penetrations that would allow petroleum to exit the vault defeat the purpose of having secondary containment.

Cut-Off Walls

Cut-off walls are vertical impermeable barriers (often made of concrete and/or clay) that surround the excavation zone. The walls are buried to a depth below the lowest local groundwater level at any given time to impede – or cut off – the movement of groundwater that may be contaminated if any part of the tank system fails. A monitoring well – placed in the area between the tank and cut-off wall – acts as the primary form of leak detection and is counted as interstitial monitoring. However, cut-off walls may only be used as secondary containment if the stored petroleum floats in water (i.e., its specific gravity is less than one).

There are some known issues with cut-off walls:

- They only partially meet the secondary containment requirements: they may prevent the lateral movement of any spills that escape from primary containment, but they do not prevent those spills from becoming releases as cut-off walls typically have no bottom. (Impervious underlayment is often used in conjunction with cut-off walls to completely contain such spills.)
- Verifying the condition of cut-off walls is also nigh impossible due to being buried.

Cut-off walls fell out of favor with the industry in the late 1980s/early 1990s for these reasons and double-wall construction became standard practice.

Impervious Underlayment

Impervious underlayment is an impermeable barrier (i.e., liner) that encapsulates the excavation zone (and extends at least a foot beyond all sides of the tank). The liner – often made of plastic – blocks the exit of any liquids within the excavation zone and is sloped in a way such that liquids pool into an area that is monitored for leaks by a monitoring well. The groundwater conditions required for impervious underlayment are the opposite of cut-off walls – groundwater levels must never reach the excavation zone. Surface waters must also be directed away from the excavation zone (often through concrete pads) to avoid being trapped by the underlayment and needing to be pumped out via the monitoring well.

Liners are not without drawbacks:

- The only way to prove the tightness of impervious underlayment – as installed on site – is to install an additional monitoring well outside the excavation area. Water levels (measured at the wells) are expected to be different if the liner is still in good working condition. This method, however, is not foolproof and often lead to false negatives that require complete re-excavation to repair the liner.
- The effectiveness of impervious underlayment as secondary containment also depends on how the liner is laid out into the excavation area. Certain layouts leave gaps that allow spills to seep into the lands and/or waters of the State (i.e., turn into a release); to prevent this, cut-off walls are often used together with impervious underlayment.

The difficulty of verifying the health of the liner, coupled with the necessity/low reliability of the additional monitoring well and/or cut-off walls, contribute to general disfavor towards impervious underlayment as a form of secondary containment.

Corrosion Protection

Purpose

Metal tank system components undergo corrosion caused by electrochemical oxidation of metals when in contact with certain media/substances – this results in degradation of the component material and compromising its integrity, which in turn, may result in spills and even releases. Corrosion protection equipment helps reduce and/or eliminate this risk of degradation for metal components.

Requirements

Corrosion protection generally refers to methods/equipment that protect metal tank system components (that routinely contain petroleum) from external corrosion that occurs when the metal component is in contact with the ground (or any other electrolytes).

Facilities must meet the following overall corrosion protection requirements[260] (as applicable).

SP3 Corrosion Protection	***Requirements***
General	Metal tank system components must be: • installed in accordance with the manufacturer's instructions (and an acceptable code of practice[261]); and • protected from corrosion. Field-installed cathodic protection (CP) systems must: • be designed by a corrosion expert; • allow determination of current operating status (for impressed current systems); and • be installed in accordance with the manufacturer's instructions (and an acceptable code of practice[261]).
Periodic Equipment Inspections/ Testing	• Cathodic protection systems must be tested for operability[262] (by a qualified CP tester) at least annually. ○ Testing must be performed in accordance with an acceptable standard. • Impressed current systems must be inspected for continuous, proper operation[262] at least every 60 days.

Recordkeeping	*Retain:*
	• *Equipment Inspection/Testing Records:*
	  ○ *CP Test Records:* For three years
	  ○ *Impressed Current (IC) Inspection Records:* For three years
	• *Repair (and Post-Repair)[263] Records:* Until the tank system is permanently closed

DEC may require facilities to conduct additional inspections/testing if the facility has suspected leaks or inspections/testing that have not been performed. Facilities must complete this additional inspection/testing within ten days after receipt of the request, or DEC will conduct inspections/testing at the facility's expense.

[260] Corrosion protection requirements for SP3 tank systems are found in 6 NYCRR paragraphs 613-3.1(b)(1), (2).
[261] See **Installation** on p. 206.
[262] CP testing and impressed current inspection requirements for SP3 tank systems are found in 6 NYCRR paragraphs 613-3.2(i)(2), (3), respectively.
[263] See **Repairs** on p. 206.

Tank and Piping Corrosion Protection

Steel (non-clad/jacketed) tanks in contact with the ground must utilize (at least) one of the following forms of corrosion protection and meet applicable requirements[264].

Corrosion Protection: SP3 Tanks	***Cat. 1 Tank[265]***	***Cat. 2 Tank[266]***	***Cat. 3 Tank[266]***
Sacrificial Anodes	No standard(s) specified	*Designed, Fabricated, and Installed:* In accordance with one of the following[267]: • API RP 1632 (January 1983) • sti-P3 (July 1983) • ULC-S603.1-M1982 (1982)	*Designed, Fabricated, and Installed:* In accordance with one of the following[267]: • NACE SP0285-2011 (2011) • sti-P3 (September 2013) • UL 1746 (January 2007) • ULC-S603.1-11 (2011)
	• *Test for CP Operability:* Annually, in accordance with one of the following[267]: o NACE SP0285-2011 (2011) o NACE TM0101-2012 (2012) o STI R051 (January 2006) • *Retain CP Test Records:* For three years		
Impressed Current (IC)	No standard(s) specified	*Designed, Fabricated, and Installed:* In accordance with API RP 1632 (January 1983)[267]	*Designed, Fabricated, and Installed:* In accordance with NACE SP0285-2011 (2011)[267]
	• *Test for CP Operability:* Annually, in accordance with one of the following[267]: o NACE SP0285-2011 (2011) o NACE TM0101-2012 (2012) • *Inspect for IC Operability:* Every 60 days • *Retain CP Testing and IC Inspection Records:* For three years		

[264] Corrosion protection standards/requirements for SP3 tanks are found in 6 NYCRR clauses 613-3.1(b)(1)(ii)(*b*) & (iii)(*b*).
[265] Cat. 1 tanks were not required to meet corrosion protection requirements to avoid retroactive imposition of then-new requirements.
[266] Steel Cat. 2/3 tanks must be coated with a suitable dielectric material, especially when equipped with sacrificial anodes.
[267] Facilities may also comply with a code of practice developed by a nationally recognized association or independent testing laboratory and approved by the DEC.

Metal piping (and ancillary equipment) in contact with the ground must utilize one of the following forms of corrosion protection and meet applicable requirements[268].

Corrosion Protection: SP3 Piping	***Cat. 1 Piping[269]***	***Cat. 2 Piping***	***Cat. 3 Piping[270]***
Sacrificial Anodes[271]	No standard(s) specified	*Designed, Constructed, and Installed:* • To provide a minimum of 30 years of protection • With monitors to check on the adequacy of the CP system	*Designed, Fabricated, and Installed:* In accordance with one of the following[267]: • API RP 1632 (January 1996; revised 2002) • NACE SP0169-2013 (2013) • NACE SP0285-2011 (2011) • STI R892 (January 2006)
	• *Test for CP Operability:* Annually, in accordance with one of the following[267]: ○ NACE SP0169-2013 (2013) ○ NACE SP0285-2011 (2011) ○ NACE TM0497-2012 (2012) • *Retain CP Test Records:* For three years		
Impressed Current (IC)	No standard(s) specified	*Designed, Constructed, and Installed:* • To provide a minimum of 30 years of protection • With monitors to check on the adequacy of the CP system	*Designed, Fabricated, and Installed:* In accordance with one of the following[267]: • API RP 1632 (January 1996; revised 2002) • NACE SP0169-2013 (2013) • NACE SP0285-2011 (2011) • STI R892 (January 2006)
	• *Test for CP Operability:* Annually, in accordance with one of the following[267]: ○ NACE SP0169-2013 (2013) ○ NACE SP0285-2011 (2011) ○ NACE TM0497-2012 (2012) • *Inspect for IC Operability:* Every 60 days • *Retain CP Testing and IC Inspection Records:* For three years		

[268] Corrosion protection standards/requirements for SP3 piping/ancillary equipment are found in 6 NYCRR clauses 613-3.1(b)(2)(ii)(*b*) & (iii)(*b*).
[269] Cat. 1 piping was not required to meet corrosion protection requirements to avoid retroactive imposition of then-new requirements.
[270] Metal Cat. 3 piping must be coated with a suitable dielectric material, especially when equipped with sacrificial anodes.
[271] Piping & ancillary equipment with sacrificial anodes must be electrically isolated from the tank and the dispenser.

Issues

- **Missing Test Ports**

  Permanent CP test ports are not strictly required on cathodically protected tank system components but are typically installed to facilitate testing; as such, the lack of test ports is not a violation, but is a strong indication that previous CP tests may not have been conducted correctly.

- **Tank System Components Made of Copper or Galvanized Steel (and Other Non-Steel Metals)**

  Modern tank systems rarely have copper or galvanized steel components, but inspectors will run into them occasionally. These components count as metal components that are not inherently corrosion-resistant and thus require cathodic protection (as with cathodically protected steel). Applicable CP test standards for such components may be slightly different, but the testing procedures/records will be largely identical.

- **Corroded Equipment in Containment Sumps**

  Inspectors may encounter corroded equipment (e.g., piping, submersible turbine pumps or STPs, line leak detectors) within containment sumps, often thought to be due to vapor intrusion from the tank storing ethanol-blended motor fuels. Inspectors are advised to note these on the inspection form but not cite them as violations, as long as the corroded equipment has not yet failed, and the enclosing sump is tight/not open to the lands and/or waters of the State.

- **Soil/Backfill in Sumps**

  Metal piping and ancillary equipment inside sumps are considered in contact with the ground when the sump is filled with soil or other backfill media (as is common downstate). Such components are susceptible to and must be protected from corrosion if in contact with earthen materials (e.g., soil, rocks, pea gravel, etc.). This can be done by booting the metal components, installing sacrificial anodes, or removing the earthen materials.

- **Failed Cathodic Protection Survey**

  A failed CP test does not, by itself, constitute a reportable spill; it does, however, mean that the tank system is noncompliant and must be either taken out of service to be repaired/replaced, or permanently closed.

Questions

CP_pre	***Is the required equipment present? Select all corrosion protection equipment that apply to the tank system, including those required, and any supplementary equipment. Record any inaccuracies with tank/piping type/CP or internal lining under INSP_comm (p. 2).***
Y	» No issues were found under this question.
NT	» *613-3.1(b)(1)(ii)(b) / 3.1(b)(1)(ii)(d) / 3.1(b)(1)(iii)(b) / 3.1(b)(1)(iii)(d):* The steel tank is not equipped with the required cathodic protection system (and is otherwise not protected from corrosion). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to permanently close the tank system within 60 days after the date of the NOV. » *Additional Action(s):* Lifting the AST and/or installing an impermeable barrier is not feasible when the tank has a double-bottom (with sand in the interstitial space); in such cases, the facility must (submit a plan to) either close the tank or install a CP system.
XPT	» Tank corrosion protection is not required because the tank is either made of a noncorrodible material or electrically isolated from the ground.
XTT [SP3/SP4/SP5]	» Tank corrosion protection is not required because the tank is a SP3/SP5, Cat. 1 UST.
NP	» *613-3.1(b)(2)(ii)(b) / 3.1(b)(2)(iii)(b):* The (metal) piping/ancillary equipment is not equipped with the required cathodic protection system (and is otherwise not protected from corrosion). » *Note(s):* This Response does not include any piping/ancillary equipment that are partly not protected from corrosion; such violations should be captured under Response **NA** instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to replace the unprotected piping/ancillary equipment (with a corresponding tank system component that is either made of a noncorrodible material or electrically isolated/cathodically protected) within 60 days after the date of the NOV.
NA	» *613-3.1(b)(2)(ii)(b) / 3.1(b)(2)(iii)(b):* A portion of the piping/ancillary equipment is not protected from corrosion. » *Note(s):* This Response does not include any piping/ancillary equipment that are wholly not protected from corrosion; such violations should be captured under Response **NP** instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either: install a cathodic protection system for/electrically isolate the unprotected portion of the piping/ancillary equipment and submit documentation for the cathodically protected/electrically isolated equipment; or replace (and submit replacement documentation for) the piping/ancillary equipment with a corresponding tank system component that is either made of a noncorrodible material or electrically isolated/cathodically protected.
XPP	» Piping/ancillary equipment corrosion protection is not required because the tank system component is either made of a noncorrodible material or electrically isolated from the ground.
XTP [SP3/SP4/SP5]	» Piping/ancillary equipment corrosion protection is not required because the tank system component is a Cat. 1 component that is part of a SP3 UST system.

CP_gwo	*Is the equipment in good working order?*
Y	» No issues were found under this question.
TMP	» *613-1.12 / 3.2(i)(1) / 3.2(i)(2)(ii):* The cathodic protection system is not providing adequate protection to the tank. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to either repair or replace the cathodic protection system within 90 days after the date of the NOV.
PMP	» *613-1.12 / 3.2(i)(1) / 3.2(i)(2)(ii):* The cathodic protection system is not providing adequate protection to the piping/ancillary equipment. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to either repair or replace the cathodic protection system within 90 days after the date of the NOV.
RO	» *613-1.12 / 3.2(i)(1):* The rectifier is not operational. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either repair or replace (and submit repair/replacement documentation for) the rectifier.
RP	» *613-1.12 / 3.2(i)(1):* The rectifier does not have continuous power (but is otherwise operational). » *Note(s):* This Response does not include any rectifier that has had occasional power interruptions (e.g., someone turned off the power); such violations should be captured under Response **RCO** instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either repair or reconfigure (and submit repair/reconfiguration documentation for) the impressed current system such that the rectifier has continuous power.
RCO	» *613-1.12 / 3.2(i)(1):* The rectifier clock indicates that the rectifier has not operated continuously (but is otherwise operational). » *Note(s):* This Response does not include any rectifier that has periodic power interruptions (e.g., due to how the CP system was designed); such violations should be captured under Response **RP** instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either repair or reconfigure (and submit repair/reconfiguration documentation for) the impressed current system such that the rectifier has continuous power.
LF	» *613-1.12:* The lining no longer meets the original design specifications. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to either repair the internal lining or permanently close the tank system, within 60 days after the date of the NOV. » *Additional Action(s):* Lining inspections – particularly those performed in accordance with API RP 1631 (June 2001) – often include an assessment of the tank wall thickness (typically quantitative) to determine if the tank either is still structurally sound or still has sufficient thickness (compared to its original thickness) to continue service. The tank system must be closed if the tank wall either is too thin or already has holes (through corrosion).

CP_itm	*Is the equipment being tested/monitored periodically?*
Y	» No issues were found under this question.
NTT	» *613-3.2(i)(2):* Cathodic protection testing is not being performed for the tank. » *Note(s):* Test results are the primary evidence that cathodic protection testing is being performed; if testing is being performed, but test results are not being retained for at least three years, Response **NRT** under Question **CP_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a cathodic protection test.
PTT	» *613-3.2(i)(2)(i):* Cathodic protection testing is not being performed for the tank at least annually. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a cathodic protection test. » *Additional Action(s):* There is no need for the curative measure if the most recent annual cathodic protection test was performed but a previous one was not; this violation, however, should still be cited.
NPT	» *613-3.2(i)(2):* Cathodic protection testing is not being performed for the piping/ancillary equipment. » *Note(s):* Test results are the primary evidence that cathodic protection testing is being performed; if testing is being performed, but test results are not being retained for at least three years, Response **NRP** under Question **CP_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a cathodic protection test.
PPT	» *613-3.2(i)(2)(i):* Cathodic protection testing is not being performed for the piping/ancillary equipment at least annually. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a cathodic protection test. » *Additional Action(s):* There is no need for the curative measure if the most recent annual cathodic protection test was performed but a previous one was not; this violation, however, should still be cited.
NIC	» *613-3.2(i)(3):* Impressed current inspections are not being performed. » *Note(s):* Inspection records are the primary evidence that impressed current inspections are being performed; if inspections are being performed, but either the inspections are not being recorded or records are not being retained for at least three years, Response **NRI** under Question **CP_rec** should be selected instead. » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must perform (and submit the records of) an impressed current inspection.
PIC	» *613-3.2(i)(3):* Impressed current inspections are not being performed at least every 60 days. » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must perform (and submit the records of) an impressed current inspection. » *Additional Action(s):* There is no need for the curative measure if the most recent 60-day impressed current inspection was performed but a previous one was not; this violation, however, should still be cited.

CP_rec	***Are the inspection records being retained?*** ***Note: CP test and impressed current inspection records must be retained for 3 years. Lining inspection records must be retained for 5 years.***
Y	» No issues were found under this question.
NRT	» *613-3.2(i)(4):* Cathodic protection test results are not being retained (for the tank) for at least three years. » *Note(s):* Test results are the primary evidence that cathodic protection testing is being performed; if the test results are missing, cathodic protection testing is likely not being performed (and Response **NTT** under Question **CP_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the results of the last test, or perform (and submit the results of) a cathodic protection test.
NRP	» *613-3.2(i)(4):* Cathodic protection test results are not being retained (for the piping) for at least three years. » *Note(s):* Test results are the primary evidence that cathodic protection testing is being performed; if the test results are missing, cathodic protection testing is likely not being performed (and Response **NTP** under Question **CP_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the results of the last test, or perform (and submit the results of) a cathodic protection test.
NRI	» *613-3.2(i)(4):* Impressed current inspections are not being recorded, or records are not being retained for at least three years. » *Note(s):* Inspection records are the primary evidence that impressed current inspections are being performed; if the records are missing, impressed current inspections are likely not being performed (and Response **NIC** under Question **CP_itm** should be selected instead). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must either submit the records of the last three impressed current inspections, or perform (and submit the records of) an impressed current inspection.
CP_com	***Was the inspection complete/adequate?***
Y	» No issues were found under this question.
TR	» *613-3.2(i)(2):* Not enough readings were taken (during the cathodic protection test) to accurately assess whether the cathodic protection system is providing adequate protection to the tank. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a cathodic protection test.
PR	» *613-3.2(i)(2):* Not enough readings were taken (during the cathodic protection test) to accurately assess whether the cathodic protection system is providing adequate protection to the piping/ancillary equipment. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a cathodic protection test.
ICI	» *613-3.2(i)(3):* The impressed current inspection records do not have all of the required information. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an impressed current inspection and include all required information.

CP_rat	***If repairs were made, are the repairs appropriate/adequate, and was the equipment tested after the repair?***
Y	» No issues were found under this question.
IN	» *613-3.2(j)(3) / 3.2(j)(4):* Repairs performed to either the cathodic protection system or a cathodically protected tank system component were either inappropriate or inadequate. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either: take the tank system out of service and submit a plan to properly repair the cathodic protection system/cathodically protected tank system component (and perform/submit the results of a cathodic protection test) within 90 calendar days after the date of the NOV; or submit a plan to permanently close the tank system within 60 days after the date of the NOV.
NT	» *613-3.2(i)(2)(i) / 3.2(j)(10):* A cathodic protection test was not performed, or was not performed within six months, after structural repairs to either the cathodic protection system or a cathodically protected tank system component. » *Note(s):* Cathodic protection systems not providing adequate protection to the repaired tank system component should be captured under Question **CP_gwo**, Response **TMP**/**PMP**; all other issues found with the cathodic protection test should be captured under this Response. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a cathodic protection test.

Options

Sacrificial Anodes

Galvanic corrosion is an electrochemical reaction that occurs during oxidation of metals in contact with an electrolytic environment (i.e., soil). This reaction can be exploited to protect metal equipment from corrosion, by attaching sacrificial anodes – blocks of metal (often zinc) with a more negative electric potential than the tank system component – that preferentially corrode, protecting the component in the process (hence the name "sacrificial" anode).

Sacrificial anodes are cathodic protection (CP) systems often used on tank system components where 95% of the component's surface area is coated or otherwise isolated from the ground. Components that either are too big (i.e., 5% of the surface area is too large to protect with anodes) or have unknown surface areas (i.e., components to be retrofitted) must have impressed current instead.

Sacrificial anodes also have a finite life – the tank system component will be protected from corrosion until the metal block is exhausted (the rate of which is affected by the surrounding soil conditions). To this end, the operability of sacrificial anodes – as a form of corrosion protection – must be tested (by a qualified CP tester):

- within six months after CP system installation/reinstallation;
- within six months after CP system repair; and
- annually thereafter.

Annual CP test records must be retained for (at least) three years and have the following information.

	CP Test – Sacrificial Anodes

SP3 Corrosion Protection Records:
 	
Required Information
	• Tank ID number
	• Date/time of CP test
	• A statement from the technician that the CP system was tested in accordance with an acceptable standard
	• Type of equipment used
	• An evaluation of the electrical continuity of the tank system
	• (Valid) CP readings for the following (as applicable; must be -850 mV or less):
	  ○ Tanks (at least three measurements; more, if necessary, per tank size):
	  ▪ The middle of the tank
	  ▪ Both ends of the tank (along the center line)
	  ○ Piping (at least one measurement per run)
	  ○ Ancillary equipment not isolated from the ground (at least one measurement)
	  ○ A remote soil location
	• A statement from the technician as to:
	  ○ Operating status of the CP system
	  ○ Tester's recommendations
	  ○ Any repairs to cathodically protected components conducted within the past year
	• Test results (i.e., pass/fail)
	• Technician's information:
	  ○ Qualifications/credentials
	  ○ Company name/address
	  ○ Name/signature
	• Any relevant notes regarding the inspection, weather/geologic conditions at the time of the test, and the tank system/facility (i.e., physical changes to the site since CP system installation that could impact monitoring), etc.

Metal tank system components with (nearly) depleted anodes (as indicated by a failed CP test) must then either be immediately replaced with new anodes or retrofitted with an impressed current system – as circumstances dictate – to protect against corrosion; however, if the component has already been corroded, the component must first be either repaired or replaced.

Issues

- **Cathodic Protection Survey Readings for Sacrificial Anodes**

  CP tests for sacrificial anodes must not be performed through frozen soil or through a concrete or asphalt pad, unless direct access is provided (e.g., by drilling holes).

Impressed Current (IC) System

Impressed current systems maintain the optimum structure-to-soil potential between metal tank system components and the surrounding electrolyte (i.e., soil), by linking the component to an anode – made of high silicon-chromium cast iron or graphite – using impressed direct current (DC) often transformed by a rectifier from alternating current (AC). The current ensures that the electric potential of the anode is always more negative than that of the component, thereby protecting the component from corrosion.

IC systems provide versatility to the level of corrosion protection required for metal tank system components and thus are preferred over sacrificial anodes in soil conditions with high resistivity (i.e., dry/arid soil, sand, or dirt) and for components too big to be protected by sacrificial anodes.

These systems, however, require proper installation/calibration and a continuously powered rectifier. To this end, the operability of IC systems – as a form of corrosion protection – must be tested (by a qualified CP tester):

- within six months after CP system installation/reinstallation;
- within six months after CP system repair; and
- annually thereafter.

Impressed current systems must also be inspected every 60 days for continuous, proper operation.

Annual CP test and IC inspection records must be retained for (at least) three years and have the following information.

	CP Test – Impressed Current	***Impressed Current Inspection***

SP3 Corrosion Protection Records:
 	
Required Information
	• Tank ID number
	• Date/time of CP test
	• A statement from the technician that the CP system was tested in accordance with an acceptable standard
	• Type of equipment used
	• An evaluation of the electrical continuity of the tank system
	• (Valid) CP readings for the following (as applicable; must be -850 mV or less):
	  ○ Tanks (at least three measurements; more, if necessary, per tank size):
	  ▪ The middle of the tank
	  ▪ Both ends of the tank (along the center line)
	  ○ Piping (at least one measurement per run)
	  ○ Ancillary equipment not isolated from the ground (at least one measurement)
	  ○ A remote soil location
	• A report on 100-mV polarization decay (if any readings do not meet the -850-mV requirement)
	• Amperage readings (from the rectifier) at the time of the CP test
	• A statement from the technician as to:
	  ○ Operating status of the CP system
	  ○ Tester's recommendations
	  ○ Any repairs to cathodically protected components conducted within the past year
	• Test results (i.e., pass/fail)
	• Technician's information:
	  ○ Qualifications/credentials
	  ○ Company name/address
	  ○ Name/signature
	• Any relevant notes regarding the inspection, weather/geologic conditions at the time of the test, and the tank system/facility, etc.
		• Status of the rectifier (i.e., is the rectifier on)
		• Number of hours of operation since the last inspection
		  ○ Should be roughly equal to 1440 hours if inspections are performed every 60 days
		• Voltage and amperage readings at the time of:
		  ○ Most recent CP test
		  ○ IC inspection
		• A comparison of the two sets of amperage readings (the inspection readings must be within 20% of the readings from the most recent CP test)

Deviations from the IC inspection standards (i.e., 1440 hours of continuous operation, or ≤ 20% discrepancy between inspection/CP test amperage readings) and/or failed CP test results, may indicate a problem with the impressed current system and/or the cathodically protected tank system component, and should elicit either an explanation or an immediate action (i.e., repair, diagnostic CP test, taking the tank system out of service, etc.) from the facility.

Issues

- **Pauses in Rectifier Operation**

  Inspectors may find that the impressed current system lost power temporarily but should recognize that certain situations are beyond the facility's control (though still considered violations) and may not warrant penalties and/or a consent order. The owner/operator should note any losses of power in their records and include the reason(s) why the power was lost and for how long. Rectifiers should be on a circuit breaker separate from the facility's normal breakers to avoid these pauses in operation. Rectifier clocks – while not strictly required – are also recommended as they help facilities track these pauses (and respond to them as soon as possible).

Color Code and (Tank) Label

Purpose

Color coding ports allows for quick (visual) identification of either the form of petroleum being stored in a specific tank, or the tank system equipment accessible from the surface. Doing so helps the person responsible for transfer activities avoid delivering a petroleum type to the wrong tank (i.e., cross-drops), which can result in off-spec petroleum, equipment failure/corrosion due to incompatibility between the tank and the petroleum, or even direct releases to the lands and/or waters of the State (if delivered to a monitoring well).

Tank labels provide a means of identifying a tank and its specifications quickly and without the need for other documentation (e.g., installation records, registration certificate); this is particularly useful during a delivery, a change-in-service, an emergency, or if the tank has been abandoned.

Requirements

Fill ports must be color coded[272] (e.g., painted, spray-painted, molded, etc.) in accordance with API RP 1637 (April 2020) to denote the petroleum type currently stored in the tank system. Other access ports (i.e., not for deliveries) must similarly be color coded to identify the equipment within. Coding schemes for some common petroleum types and tank system equipment are described below.

SP3 Color Coding	***Petroleum/Equipment Type***		***Background Color***	***Superimposed Text/Symbol***
Motor Fuels	*Gasoline/Ethanol Blends (≤ E10)*	*Regular (87 Octane)*	White	
		Midgrade (88-89 Octane)	Blue	
		Premium (≥ 90 Octane)	Red	
	(Higher) Ethanol Blends	*E15*	Copper	Black ‘E15’
		> E15 and < E85		Black ‘EXX’ (where ‘XX’ denotes ethanol content)
		E85		Black ‘E85’
	Biodiesel (On-Road; ULSD)	*≤ B5*	Yellow	
		> B5 and < B99.9		Black ‘BXX’ (where ‘XX’ denotes biodiesel content)
	Biodiesel (Off-Road; dyed red)	*≤ B5*		Red ‘OFF’
		> B5 and < B99.9		Red ‘OFF’ and Black ‘BXX’ (where ‘XX’ denotes biodiesel content)
	Biodiesel	*B99.9/B100*	Light Blue	
	Renewable Diesel		Turquoise	
Heating Fuels/ Fuel Oils	*Kerosene*		Brown	
	No. 1 Fuel Oil		Dark Green	Black ‘1’
	No. 2 Fuel Oil			Black ‘2’
	Biofuel Oil			Black ‘BXX-X’ (where ‘XX’ denotes biodiesel content, and ‘X’ denotes fuel oil grade 1 or 2)
Miscellaneous	*Used Oil*		Light Gray	
	Monitoring Well[273]		White	Black triangle
	(Dual Point) Vapor Recovery		Orange	

Petroleum types not included in API RP 1637 (April 2020) must be identified at or near the fill port (e.g., with stenciled text, stickers, placards, etc.).

[272] Fill port color coding, tank label, and monitoring well requirements for SP3 tank systems are found in 6 NYCRR paragraphs 613-3.2(d)(1 – 3).

[273] 6 NYCRR paragraph 613-3.2(d)(3): Monitoring wells must be sealed or capped to prevent liquids from entering from the surface.

Fill ports for Cat. 2/3 tanks must also have a tank label[272]. These refer to plastic/metal plates or stenciled information placed at or near the fill port and are primarily used by persons responsible for transfer activities: prior to the transfer, the person reads the label to ensure that the correct type/amount of petroleum will be made to the appropriate tank, thereby avoiding spills/overfills and cross-drops. Tank labels must have the following information.

	Cat. 1 Tank	***Cat. 2 Tank***	***Cat. 3 Tank***
SP3 Tank Label: ***Required Information***	No required details specified[274]	• Tank ID number • Tank design capacity (i.e., the volume of petroleum the tank is designed to hold) • Tank working capacity (i.e., the portion of the design capacity that can be filled before the overfill prevention device is activated) ○ If multiple overfill prevention devices are installed (whose working capacities differ), the lowest working capacity must be listed. • Type(s) of petroleum that can be stored in the tank	

Issues

- **Identifiability/Legibility**

  Fill port color coding/markings must be readily identifiable. Faded coloring and misshapen labels must be redone. Markings should also be extended to the surrounding crown/concrete to avoid using the wrong lid/cap on the wrong fill port. When text is used for petroleum types not included in API 1637, the text should be at least 3” in height and ½” in stroke.

  Information on the tank label must similarly be legible – the information is of no use to anyone if it cannot be read.

- **Compatibility/Durability of Fill Port Markings**

  There are no strict requirements regarding the type of material(s) used for either the color code or the tank label, but these should be able to withstand exposure to petroleum (vapors), inclement weather, and vehicle traffic.

- **Fill Port Manifolded to Multiple Tanks**

  If a fill port is manifolded to multiple tanks:

  - the different types of stored petroleum must be identified (e.g., with a placard) near the fill port, in lieu of color coding in accordance with API RP 1637 (April 2020); and
  - the tank labels must be placed adjacent to the fill port, but each label must be paired with the corresponding fill port (non-color code) identification such that the person responsible for transfer activities can easily find the label that goes with each tank.

- **Labels Compliant with the Former 6 NYCRR Part 614**

  The original iteration of the PBS regulations had broader, more detailed requirements for tank labels. Labels compliant with these older requirements need not be replaced, if the pertinent information on the label – tank ID, design/working capacities, type(s) of petroleum the tank can store – are still accurate.

- **Color Coding for Fill Ports with Coaxial Vapor Recovery**

  Fill ports for tanks storing gasoline – and any other gasoline blends – may be equipped coaxial vapor recovery: the transfer of gasoline and the removal of the displaced fumes are done through the same fill port, which increases the risk of cross-drops into the tank. As such, the fill port should feature an orange ring immediately surrounding the color coding for the stored gasoline (blend).

[274] Cat. 1 UST systems were not required to follow any tank labeling requirements to avoid retroactive imposition of then-new requirements.

Questions

CL_pre	***Is the required equipment present?***
Y	» No issues were found under this question.
NFC	» *613-3.2(d)(2):* The fill port is not color coded (or otherwise marked). » *Note(s):* Fill ports that are marked instead of being color coded accordingly should be captured under Question **CL_gwo**, Response **CIN**. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must properly color code (or mark) the fill port and submit a photograph showing the color coded/marked fill port.
XPF	» Fill port color coding/marking is not required because the tank does not have a fill port.
NWC	» *613-3.2(d)(3):* The monitoring wells are not color coded (or otherwise marked), or do not have (marked) lids. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must clearly identify the monitoring wells and submit a photograph showing the marked/color coded lids. » *Additional Action(s):* The facility as-built plan (if required) must also make note of all monitoring wells (and their locations) on site.
XPW	» Monitoring well color coding/marking is not required because the tank system does not have monitoring wells.
NL	» *613-3.2(d)(1):* A tank label is not present at (or near) each fill port associated with the tank. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must install a tank label and submit a photograph showing the fill port(s) with the new tank label.
XTL [SP2/SP3/SP5]	» Tank labels are not required because the tank is a SP3/SP5, Cat. 1 UST.
CL_gwo	***Is the equipment in good working order?***
Y	» No issues were found under this question.
CIN	» *613-1.12 / 3.2(d)(2):* The color coding/marking on the fill port are either unclear or indicative of something else (e.g., a different petroleum type or a monitoring well). » *Note(s):* This Response also includes any such ports with either faded/unidentifiable or inaccurate color coding/markings. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must properly color code (or mark) the fill port and submit a photograph showing the color coded/marked fill port.
WIM	» *613-1.12 / 3.2(d)(3):* The color coding/marking on the monitoring wells are either unclear or indicative of something else (e.g., a fill port). » *Note(s):* This Response also includes any such ports with either faded/unidentifiable or inaccurate color coding/markings. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must properly color code (or mark) the monitoring wells and submit a photograph showing the color coded/marked lids.
LIN	» *613-1.12 / 3.2(d)(1):* The tank label has either incomplete or inaccurate information. » *Note(s):* This Response also includes any faded/unidentifiable tank labels. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must rewrite or replace the tank label and submit a photograph showing the fill port with the rewritten/replaced tank label.
CL_mis	***Are there any other observed violations?***
MWS	» *613-3.2(d)(3):* The monitoring wells are not capped/secured (to prevent liquids from entering from the surface). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must cap/secure the monitoring wells and submit a photograph showing the capped/secured wells.

Overfill Prevention

Purpose

Overfill prevention devices are installed on tank systems such that the person responsible for the delivery knows when to stop the transfer; this helps reduce the risk of overfills, which comprise a large fraction of preventable spills.

Requirements

Overfill prevention (OP) generally refers to equipment designed to prevent the overfilling of a tank during a delivery. Facilities must meet the following overall overfill prevention requirements[275] (as applicable).

SP3 Overfill Prevention	***Requirements***
General	OP equipment must be: • installed in accordance with the manufacturer's instructions (and an acceptable code of practice[276]); • able to prevent overfills by either shutting off/restricting flow into the tank or alerting the person responsible for transfer activities, when the tank is filled to its working capacity[277]; and • appropriate for the type of delivery made to the tank system and all other tank system equipment installed.
Recordkeeping	*Retain Repair (and Post-Repair)[278] Records:* Until the tank system is permanently closed

[275] Overfill prevention requirements for SP3 tank systems are found in 6 NYCRR paragraph 613-3.1(b)(3).
[276] See **Installation** on p. 206.
[277] 6 NYCRR subdivision 613-1.3(cd): *Working capacity* means the portion of the design capacity of a tank that may be filled before engaging the overfill prevention device, reduced by an allowance for freeboard and petroleum expansion.
[278] See **Repairs** on p. 206.

Tank Overfill Prevention

Tanks must utilize one (or more) of the following forms of overfill prevention and meet applicable requirements[275], except for those that receive 25 gallons or less during each transfer[279].

Overfill Prevention: SP3 Tanks	***Cat. 1 Tank***	***Cat. 2 Tank***	***Cat. 3 Tank***

Automatic Shutoff Valve (ASV)	Any form of overfill prevention acceptable for Cat. 2 or 3 tanks	• *Acceptable for:*
		  ○ Gravity-head deliveries
		  ○ Pressurized deliveries (if designed to handle higher pressures/flow rates)
		• *Designed, Constructed, and Installed:* To automatically shut off flow into the tank:
		  ○ when the tank is no more than 95% full; or
		  ○ so that none of the fittings located on top of the tank are exposed to petroleum (due to overfilling)	

Ball Float Valve (BFV)		• *Acceptable for:* Gravity-head deliveries
		• *Designed, Constructed, and Installed:* To restrict off flow into the tank:
		  ○ when the tank is no more than 90% full (and alert the person responsible for transfer activities to stop the delivery); or
		  ○ 30 minutes prior to overfilling so that none of the fittings located on top of the tank are exposed to petroleum (due to overfilling)	

High-Level Alarm (HLA)		• *Acceptable for:*
		  ○ Gravity-head deliveries
		  ○ Pressurized deliveries
		• *Designed, Constructed, and Installed:* To alert the person responsible for transfer activities to stop the delivery when:
		  ○ when the tank is no more than 90% full; or
		  ○ one minute before overfilling so that none of the fittings located on top of the tank are exposed to petroleum (due to overfilling)	

Level Gauge		• *Acceptable for:*
		  ○ Gravity-head deliveries
		  ○ Pressurized deliveries
		• *Designed, Constructed, and Installed:*
		  ○ to accurately show the level/volume of petroleum in the tank; and
		  ○ to be accessible to the person responsible for the transfer, such that the level/volume of petroleum in the tank can be conveniently read from the fill port	

No Overfill Prevention Required	No standard(s) specified		

Issues

- **Installation at the Correct/Appropriate Height**

  Inspectors who encounter tanks with automatic shutoff valves, ball float valves, or high-level alarms not set to activate at default working capacities (i.e., 90 or 95% of the design capacity, as applicable) should verify that the OP equipment is installed correctly, by reviewing either the installation records or the delivery records. Installation records should include calculations that justify the alternative actuation height, while delivery records should reveal any overfills (or deliveries that result in exceedance of the working capacity) – large and/or frequent overfills warrant discussion with the operator to verify if the actuation height is appropriate (or needs lowering).

  Actuation height can also be verified through the tank monitoring console (or any standalone consoles for high-level alarms). Any recent repair or servicing records (for the OP device) may also specify the actuation height.

[279] An example of such UST systems is one used to collect used oil at an automotive garage.

Questions

OP_rc	***OP equipment: select all OP equipment that apply to the tank, including those required, and any supplementary equipment installed.***
HLA	» High Level Alarm
ASV	» Automatic Shut-Off Valve
BFV	» Float Vent Valve
O	» Other
N	» *613-3.1(b)(3):* The tank is not equipped with the required overfill prevention equipment. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid overfill prevention device.
XT [SP3/SP5]	» Overfill prevention is not required because the tank is a SP3/SP5, Cat. 1 UST.
XP [SP2/SP3/SP5]	» Overfill prevention is not required because the UST system receives 25 gallons or less during each delivery.
NX	» *613-1.4(b):* The overfill prevention equipment could not be accessed for inspection (e.g., locked/blocked fill port, high-level alarm console in a locked room, vent pipe extractor tee either fused or buried). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must submit documentation that an overfill prevention device is present and in good working order/properly installed. » *Additional Action(s):* The inspector should conduct a follow-up inspection (where possible) to observe the overfill prevention equipment rather than rely on installation documentation or photographs from the facility.
OP_ri	***Is the registered OP equipment accurate?***
Y	» No issues were found under this question.
IN	» *613-1.9(a)(4):* The registered overfill prevention equipment is inaccurate. » *Note(s):* This Response does not include expired facility registrations, inaccurate facility information, unregistered tanks, or unregistered facilities; such violations should be captured under Question **REG_info**. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must correct the site registration online to reflect the overfill prevention equipment. » *Additional Action(s):* The inspector should note the specific inaccuracy with the overfill prevention under Question **OP_nov**, to include it in the list of registration discrepancies (in the NOV) that need to be corrected.
OP_nov	***Which OP equipment should be noted in the NOV?***

OP_val	Is the equipment valid for the tank system?
Y	» No issues were found under this question.
SLB	» The ball float valve is not required for the tank or supplements a different OP device that is being used to meet overfill prevention requirements. » *Note(s):* Ball float valves may be rendered inoperable by certain tank system components, or the type of deliveries made to the tank; in such cases, the ball float valve may need to be uninstalled.
LGB **[SP3/SP4/SP5]**	» *613-3.1(b)(3)(i)(a):* The level gauge either does not cover the entire height of the tank or is equipped on a tank that is too big/tall (and there are no other valid overfill prevention equipment in use). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid overfill prevention device.
SLG	» The level gauge is not required for the tank or supplements a different OP device that is being used to meet overfill prevention requirements.
VW	» *613-3.1(b)(3)(i):* The vent whistle is not a valid overfill prevention device for the tank (and there are no other valid overfill prevention equipment in use). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid overfill prevention device.
SVW	» The vent whistle is not required for the tank or supplements a different OP device that is being used to meet overfill prevention requirements.
OP_gwo	**Is the equipment in good working order?**
Y	» No issues were found under this question.
O	» *613-1.12 / 3.1(b)(3)(i):* The overfill prevention equipment is inoperable. » *Note(s):* The overfill prevention equipment is considered inoperable if any of the following is true: - the automatic shutoff valve has been tampered with/is obstructed; - the automatic shutoff valve is not oriented properly (e.g., the flapper does not open towards the far end of the tank, the valve is upside down); - the high-level alarm test button/function does not work; - the equipment is corroded/degraded; - the equipment is inaccurate/uncalibrated (such that the person responsible for the transfer cannot tell when to stop the flow of petroleum); - the device does not activate when the tank is filled to its working capacity; or - the tank has been repeatedly filled beyond its working capacity, per the delivery records. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must repair or replace (and submit repair/replacement documentation for) the overfill prevention equipment.
CB **[SP2/SP3/SP5]**	» *613-1.12 / 3.1(b)(3)(i)(c) / 3.1(b)(3)(i)(d):* The ball float valve is rendered inoperable by either a broken/obstructed catch basin drain valve or a damaged catch basin. » *Note(s):* This Response does not include ball float valves incompatible with either other tank system components or the type of deliveries made to the tank; such violations should be captured under Response **BFV** instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit a plan to repair/replace (and submit repair/replacement documentation for) the catch basin within 60 days after the date of the NOV, and/or install/utilize (and submit documentation of) a valid overfill prevention device.

BFV	» *613-1.12 / 3.1(b)(3)(i) / 3.1(b)(3)(ii):* The ball float valve is rendered inoperable by either another tank system component or the type of deliveries made to the tank. » *Note(s):* Ball float valves should not be used with: - automatic shutoff valves when the ball float valve activates first; - suction piping (i.e., suction pumps/air eliminators); - coaxial Stage I vapor recovery; - additional tank-top openings (e.g., fill ports, gauging ports, dual-point Stage I vapor recovery ports, etc.) without their own "trap-door" devices (e.g., check valves) or ball float valves; or - tank systems that receive pressurized deliveries. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either address the equipment incompatibility, or install/utilize (and submit documentation of) a valid overfill prevention device. » *Additional Action(s):* Addressing the equipment compatibility may not always be feasible/practical, in which case, the facility may have to utilize either an automatic shutoff valve or a high-level alarm.
ASV	» *613-1.12 / 3.1(b)(3)(i) / 3.1(b)(3)(ii):* The automatic shutoff valve is rendered inoperable by either another tank system component or the type of deliveries made to the tank. » *Note(s):* Automatic shutoff valves should not be used with: - ball float valves when the automatic shutoff valve activates second; or - tank systems that receive pressurized/gravity head deliveries (i.e., specific delivery types require certain designs). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either address the equipment incompatibility, or install/utilize (and submit documentation of) a valid overfill prevention device. » *Additional Action(s):* Addressing the equipment compatibility may not always be feasible/practical, in which case, the facility may have to utilize a high-level alarm.
AV	» *613-1.12 / 3.1(b)(3)(i)(c) / 3.1(b)(3)(i)(e):* The high-level alarm is not audible/visible (during typical weather/working conditions) from every fill port associated with the tank. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must repair or replace (and submit repair/replacement documentation for) the high-level alarm.
LGR	» *613-1.12 / 3.1(b)(3)(i)(a):* The level gauge cannot be conveniently read from every fill port associated with the tank. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either relocate (and submit installation documentation for) the level gauge or install/utilize (and submit documentation of) a valid overfill prevention device.
ACL	» *613-1.12 / 3.1(b)(3)(i):* The overfill prevention equipment is not set to activate at the appropriate level. » *Note(s):* This Response does not include overfill prevention equipment that do not activate (even when set at the appropriate level); such violations should be captured under Response **O** instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must reset the overfill prevention device to activate at an appropriate level and submit documentation justifying the new actuation height/working capacity.

Options

Automatic Shutoff Valve (ASV)

Automatic shutoff valves are mechanical devices installed within the drop tube of the fill pipe and utilize a float connected to a fill valve: the float rises as the tank is filled, which then causes the incoming petroleum to push the fill valve down. This shuts off flow into the tank, causing a visible movement in the delivery hose which tells the person responsible for the transfer to stop filling. A small hole at the side of the shutoff valve allows the delivery person to drain the contents of the hose into the tank (albeit at a much lower rate).

Two variants of the ASV exist, mainly differing on the type of float used:

- The older design has a flapper arm which hinges upward (hence the name “flapper valve”) and towards the other end of the underground tank.
  - It is prone to mechanical issues with both the float arm and the hinge.
  - Verifying that a flapper valve is in good working order requires its removal from the fill pipe.
- The newer design has a cylindrical (or semi-cylindrical) float that rises vertically.
  - It has a more enclosed construction (mostly to better avoid breaking components).
  - These cylindrical floats may be tested for operability without disassembly (using an included testing tool).

Both designs are often only compatible with gravity head deliveries. Pressurized deliveries are known to interfere with an ASV’s ability to close, which often results in petroleum spraying out of the fill pipe when disconnecting the delivery hose; to this end, a modern, more robust design was created (primarily for aboveground tanks) to handle higher pressures and prevent sprays. Peddle trucks with loose fills also should not be used to deliver petroleum to tanks with ASVs; not only are peddle trucks and loose fills outlawed by the Fire Code[280], but the nozzles for loose fills also directly bypass the shutoff valve, making overfills more likely.

ASVs must be set to the appropriate actuation height, in accordance with one of the following:

- The working capacity is set to 95% of the tank design capacity.
  - ASVs are often set to meet this out of convenience: a 5% ullage (i.e., the volume of empty space within the tank) is easier to calculate and often already accounts for the fittings.
- The ASV activates before the fittings at the top of the tank are exposed to the stored petroleum.
  - ASVs are set up to meet this only when the tank is either:
    - too big, such that the unused 5% of the design capacity would be a considerable storage volume; or
    - too small, such that a 5% ullage does not prevent wetting of the fittings.

The type of deliveries made to the tank should also be considered for the chosen working capacity:

- Low flowrates (i.e., gravity head deliveries) mean more control over the delivery, allowing for a higher working capacity.
- High flowrates (i.e., pressurized deliveries) mean less control over the delivery, necessitating a lower working capacity.

Automatic shutoff valves must also be kept in good working order; to this end, the operability of ASVs – as an overfill prevention device – must be verified:

- at valve installation/reinstallation; and
- within 30 days after valve repair.

[280] NYS Fire Code (2020) 5704.2.7.5.5.2: Underground tanks for Class I liquids having a capacity greater than 1,000 gallons (3785 L) shall be equipped with a tight fill device for connecting the fill hose to the tank.

Issues

- **Automatic Shutoff Valve with Other Overfill Prevention Equipment**

  Tank systems may be fitted with multiple types of overfill prevention equipment that are not always compatible with each other – automatic shutoff valves may be used with high-level alarms but not ball float valves. Ball float valves are typically set to activate when the tank is 90% full, well before the automatic shutoff valve (which is typically set to 95%); the closing of the ball float valve reduces the flow rate into the tank, which in turn prevents the (full) closing of the automatic shutoff valve. This may lead to an overfill larger than the capacity of the spill bucket.

- **Evidence of Installation**

  Facilities may at times claim automatic shutoff valves as their method of overfill prevention despite not being installed. Inspectors should verify the presence of the shutoff valve by looking down into the fill pipe – the bottom of the tank should be visible through a somewhat crescent-shaped opening (as opposed to the circular shape of the round drop tube). The “flat” side of this opening should face the far end of the tank.

- **Tampering with the Automatic Shutoff Valve**

  Automatic shutoff valves are sometimes obstructed, often to deliver more petroleum than the tank’s working capacity (i.e., “topping off” a tank). Operators must ensure that no such obstruction (e.g., gauging sticks holding the fill valve open) exists because it renders the shut off valve nonfunctional, which is a serious violation.

Ball Float Valve (BFV)

Ball float valves – also known as float vent valves or flow restrictors – are installed within a tank's vent pipe and consist of a tube to which a cage is attached to hold a hollow metal sphere (i.e., the ball). The ball floats with the rising petroleum level in the tank (during delivery) until a seal is created with the tube and consequently, the vent pipe. The tank is no longer able to vent, so the delivery flow rate is reduced, and the hose visibly moves – at this point, the person responsible for the transfer must stop filling. A small bleed hole on the side of the valve tube allows the delivery person to drain the hose into the fill pipe.

BFVs must be set to the appropriate actuation height, in accordance with one of the following:

- The working capacity is set to 90% of the tank design capacity.
    - BFVs are often set to meet this out of convenience: a 10% ullage (i.e., the volume of empty space within the tank) is easier to calculate and often already accounts for the fittings.
- The BFV activates 30 minutes prior to overfilling (so none of the fittings at the top of the tank are exposed to the stored petroleum).
    - BFVs are set up to meet this only when the tank is either:
        - too big, such that the unused 10% of the design capacity would be a considerable storage volume; or
        - too small, such that a 10% ullage does not prevent wetting of the fittings.

Ball float valves are susceptible to issues during operation. The ball sometimes gets stuck on the tube which may cause cavitation (i.e., warping due to excess vacuum) of the tank when the tank is unable to vent, which in turn can lead to structural damage to the tank. This can also lead to over-pressurization of the tank, which can be exacerbated by pressurized deliveries – as such, only gravity head deliveries must be made to tanks with BFVs.

Ball float valves also have a limited use: a closed BFV forces petroleum to look for a different vent, which is often any equipment that has an opening.

- Tank systems with suction piping (with suction pumps and air eliminators) cannot be equipped with ball float valves as petroleum may leak at the dispenser.
- Coaxial Stage I vapor recovery also precludes the use of ball float valves as petroleum can exit through this outer pipe of the fill port when the tank is overfilled.
- Additional fill pipes/gauge openings/other fittings without "trapdoor" devices (e.g., check valves for tank-top openings) may also bypass the ball float valve and lead to leaks when the tank is overfilled.

BFVs on tank systems with this equipment should be replaced with either an automatic shutoff valve or a high-level alarm.

Ball float valves must also be kept in good working order; to this end, the operability of BFVs – as an overfill prevention device – must be verified:

- at valve installation/reinstallation; and
- within 30 days after valve repair.

Issues

- **Ball Float Valve with Other Overfill Prevention Equipment**

  Tank systems may be fitted with multiple types of overfill prevention equipment that are not always compatible with each other – ball float valves may be used with high-level alarms, but not automatic shutoff valves. BFVs are typically set to activate when the tank is 90% full, well before the ASV (which is set to 95%); the closing of the ball float valve reduces the flow rate into the tank, which in turn prevents the (full) closing of the automatic shutoff valve. This may lead to an overfill larger than the capacity of the spill bucket.

- **Compatibility with Dual-Point Stage I Vapor Recovery**

  Vapor recovery ports are of particular concern with tanks fitted with ball float valves, as they may serve as leak points in the event of an overfill. Dual-point vapor recovery cannot be used with ball float valves, unless either both the vent pipe and the vapor recovery pipe have ball float valves, or the vapor recovery pipe branches (i.e., tees) from the vent pipe fitted with a ball float valve that is located below the branch.

- **Obstructed Drain Valves and Damaged Spill Buckets**

  Some fill port catch basins have drain valves that lead to the tank. Obstructed drain valves are known to circumvent ball float valves during delivery by acting as a vent after the ball float is activated. Damaged spill buckets must also be addressed for the same reason.

High-Level Alarm (HLA)

High-level alarms primarily consist of an electronically monitored float – also known as a magnetostrictive probe, and often (though not always) tied to a tank gauging system – which activates an alarm to alert the person responsible for the transfer when to stop filling. (The alarm must be audible and/or visible from every tank fill port during typical working and weather conditions.)

HLAs must be set to the appropriate actuation height, in accordance with one of the following:

- The working capacity is set to 90% of the tank design capacity.
    - HLAs are often set to meet this out of convenience: a 10% ullage (i.e., the volume of empty space within the tank) is easier to calculate and often already accounts for the fittings.
- The HLA activates one minute prior to overfilling (so none of the fittings at the top of the tank are exposed to the stored petroleum).
    - HLAs are set up to meet this only when the tank is either:
        - too big, such that the unused 10% of the design capacity would be a considerable storage volume; or
        - too small, such that a 10% ullage does not prevent wetting of the fittings.

The type of deliveries made to the tank should also be considered for the chosen working capacity:

- Low flowrates (i.e., gravity head deliveries) mean more control over the delivery, allowing for a higher working capacity.
- High flowrates (i.e., pressurized deliveries) mean less control over the delivery, necessitating a lower working capacity.

HLAs, by themselves, are not capable of automatically stopping or restricting flow: as such, a high-level alarm may be paired with either an automatic shutoff valve or a ball float valve but must always activate well before the tank is full to give the person responsible for the transfer enough time to react appropriately.

High-level alarms must also be kept in good working order; to this end, the operability of HLAs – as an overfill prevention device – must be verified:

- at alarm installation/reinstallation; and
- within 30 days after alarm repair.

Issues

- **Continuous Power to High-Level Alarms**

  High-level alarms require continuous power to work, especially when deliveries are made after normal operating hours (i.e., facility staff are not on site and/or have left for the day). High-level alarms should be plugged into a wall socket with a dedicated circuit breaker (separate from everything else) for this reason. Inspectors should verify continuous operability by reviewing the facility's inventory records for any overfills after hours (or deliveries that result in exceeding the tank's working capacity) – these may indicate that the high-level alarm is not operating continuously.

- **High-Level Alarms Without Test Buttons/Functions**

  High-level alarms must be visible and/or audible from all fill ports and be in good working condition. Inspectors should verify this by standing by the fill port and either looking for the high-level alarm, or having the operator manually test the alarm (i.e., hit the test button).

  However, not all HLAs are equipped with a button to test the operability of the alarm. Inspectors can assume that an alarm with no test function is operational and audible/visible from the fill port if there is no evidence of an overfill – at the fill port, in the inventory records, or in the spill history of the tank monitoring console (if so equipped).

- **Vent Whistles as High-Level Alarms**

  Vent whistles cannot be used as high-level alarms – to satisfy overfill prevention requirements – as they do not trigger an alarm to signify when the transfer must stop. Vent whistles are also not very reliable, as their efficiency largely depends on site conditions and the hearing of the person responsible for the transfer.

Level Gauge

Level gauges are physical, mechanical, or electronic devices that accurately show (at every tank fill port) the level/volume of petroleum over the full height of the tank. Multiple types exist, including:

- *Float-actuated devices* – Level readings are based on a float on the surface of the stored petroleum.
- *Displacer devices* – A partially submerged, buoyant element is attached to an elastic element whose distortion/motion is translated to a level readout.
- *Hydrostatic head sensors* – Sensors at the bottom of the tank measure the weight of the overlying petroleum, which is then multiplied by the petroleum's density (at a given temperature) to get the total volume inside the tank.
- *Capacitance sensors* – The electrical capacitance between two electrodes inside the tank is related to the volume of product within.
- *Ultrasonic level monitors* – Monitors (mounted on the underside of the tank top) bounce sound waves off the surface of the product to measure the ullage of the tank. The volume of petroleum inside the tank is equal to the difference between the design capacity and the ullage.
- *Optical devices* – A light pulse is transmitted (from the underside of the tank top) to determine the depth of the petroleum within the tank.
- *Thermal conductivity sensors* – A device senses the difference in thermal conductivity between petroleum and air, to determine where ullage and the stored petroleum meet.

The person responsible for the transfer should stop when the tank is 90% full, or at least one minute before the tank is completely full. Deviations from the 90% criterion are appropriate only when the ullage (i.e., empty space in the tank) is either: too big (such that the unused 10% would be a considerable storage volume); or too small (such that a 10% ullage is too small to avoid wetting the fittings at the top of the tank).

The type of deliveries made to the tank should also be considered for the chosen working capacity:

- Low flowrates (i.e., gravity head deliveries) mean more control over the delivery, allowing for a higher working capacity.
- High flowrates (i.e., pressurized deliveries) mean less control over the delivery, necessitating a lower working capacity.

Issues

- **Using Sight Glasses as Level Gauges**

  Sight glasses are equivalent to level gauges, but their use is not recommended to meet overfill prevention requirements.

  - Sight glasses may not be readable from the fill port when the tank is past a certain capacity/height (such that the person responsible for the transfer can readily identify the petroleum level over the tank's entire height and stop the transfer before an overfill occurs).
  - Sight glasses built with glass or plastic rarely feature a valve to shut them off from the tank: a leak/release could occur when the sight glass is struck or melts during a fire.

- **Using Tank Monitoring Consoles as Level Gauges**

  Tank monitoring consoles are acceptable forms of level gauges, as long as the console has the appropriate probes/sensors attached, is properly calibrated, and is accessible (from the fill port) to the person responsible for the transfer as the transfer occurs.

Valves

Purpose

Valves control the flow of petroleum through piping[281]: this flow can be stopped or diverted to avoid spills in case of equipment failure or user error.

Requirements

Tank systems must be equipped with the following valves (as necessary) and meet applicable requirements[282].

SP3 Valves	Cat. 1 Valve	Cat. 2 Valve	Cat. 3 Valve
Shear Valve	• *Required for:* Remote dispensers (i.e., not tank-mounted) for motor fuel, connected to pressurized piping • *Able to:* Automatically prevent flow of petroleum through the pipe, in the event of a fire or impact (to the dispenser) • *Located:* At grade, at the base/inlet of the dispenser *Note:* shear valves with a slip-joint feature cannot be used to meet regulatory requirements.		
	Designed and Installed: In accordance with: • the manufacturer's instructions (and an acceptable code of practice[283]); and • NFPA 30A (1984), section 4-3.6		*Designed and Installed:* In accordance with: • the manufacturer's instructions (and an acceptable code of practice[283]); and • NFPA 30A (2012), section 6.3.9
Solenoid/ Anti-Siphon Valve	• *Required for:* Pressurized piping, suction piping, etc., and dispensers, for motor fuel, at an elevation below the top of the tank • *Able to:* Prevent flow of petroleum by gravity, in the event of pipe or dispenser/hose failure • *Located:* Adjacent to and downstream of the operating valve		
	Designed and Installed: In accordance with: • the manufacturer's instructions (and an acceptable code of practice[283]); and • NFPA 30A (1984), section 2-1.7		*Designed and Installed:* In accordance with: • the manufacturer's instructions (and an acceptable code of practice[283]); and • NFPA 30A (2012), section 4.2.4

Check Valve	• *Required for:* Remote fill/delivery piping used for pressurized deliveries and associated with tanks:
	  ○ that have both a remote fill and a tank-top fill; or
	  ○ where petroleum levels in the tank are at a higher elevation than the remote fill port
	• *Able to:* Prevent backflow – spills/overfills – through the fill pipe during delivery/transfer (when possible)
	• *Installed:* In accordance with the manufacturer's instructions (and an acceptable code of practice[283])		

Operating Valve	• *Required for:* Tank-piping connections (i.e., not vent piping: delivery piping, pressurized piping, suction piping, etc.):
	  ○ through which petroleum can normally flow; and
	  ○ that have the potential to drain the tank by gravity
	• *Able to:* Prevent flow of petroleum by gravity, in the event of:
	  ○ pipe or dispenser/hose failure; or
	  ○ repairs to/replacement of any solenoid/anti-siphon valves immediately downstream of the operating valve
	• *Located:* As close to the tank connection as practicable, and immediately upstream of any solenoid/anti-siphon valves
	• *Installed:* In accordance with the manufacturer's instructions (and an acceptable code of practice[283])		

[281] This section does not cover valves used for overfill prevention. See **Overfill Prevention** on p. 266.
[282] Valve requirements for SP3 tank systems are found in 6 NYCRR paragraph 613-3.1(b)(6).
[283] See **Installation** on p. 206.

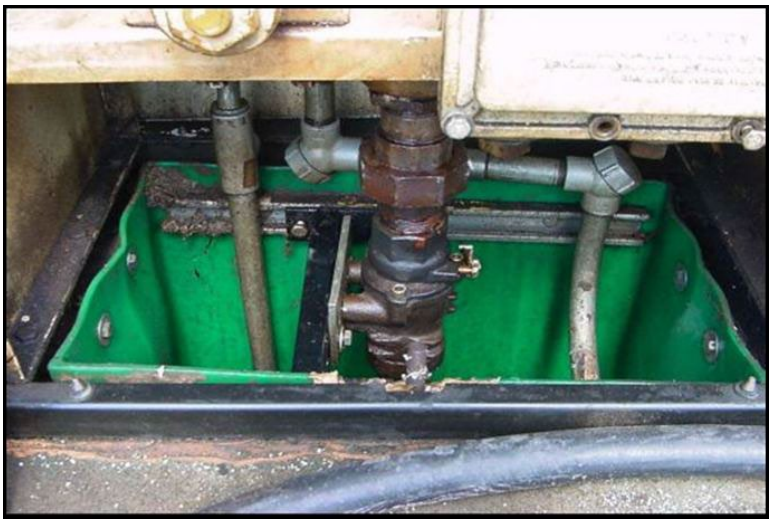
Questions

VL_pre	*Is the required equipment present?*
Y	» No issues were found under this question.
NS	» *613-3.1(b)(6)(i):* There is no shear valve installed beneath the dispenser. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must install (and submit documentation of) a shear valve.
XPS	» A shear valve is not required because the dispenser is not tied to either pressurized piping or a tank storing motor fuel.
NA	» *613-3.1(b)(6)(ii):* The piping/dispenser is not equipped with the required solenoid valve/anti-siphon valve. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must install (and submit documentation of) a solenoid valve/anti-siphon valve.
XPA	» A solenoid valve/anti-siphon valve is not required because the tank either is not storing motor fuel or does not cause a gravity head on the dispenser.
NC	» *613-3.1(b)(6)(iii):* The (remote) fill pipe is not equipped with the required check valve. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must install (and submit documentation of) a check valve.
XPC	» A check valve is not required because the tank does not have any remote fill ports, the tank does not receive pressurized deliveries, or the fill port is at a higher elevation than petroleum levels in the tank.
NO	» *613-3.1(b)(6)(iv):* The piping is not equipped with the required operating valve. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must install (and submit documentation of) an operating valve.
XPO	» An operating valve is not required because there is no piping through which the tank can be siphoned/drained by gravity.

VL_gwo	*Is the equipment in good working order?*
Y	» No issues were found under this question.
SIN	» *613-3.1(b)(6)(i):* The shear valve was not properly installed. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must correct (and submit documentation for) the shear valve installation.
SO	» *613-1.12 / 3.1(b)(6)(i):* The shear valve is inoperable or would not activate if the dispenser were dislodged from the base. » *Note(s):* Note that improper installation may also render the valve inoperable, but should instead be captured in Response **SIN**. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must repair or replace (and submit repair/replacement documentation for) the shear valve.
NXS	» *613-1.4(b):* The shear valve could not be accessed for inspection (e.g., locked/jammed dispenser, dispenser not designed to be accessed). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must submit documentation that the shear valve is present and in good working order/properly installed. » *Additional Action(s):* The inspector should conduct a follow-up inspection (where possible) to observe the shear valve rather than rely on installation documentation or photographs from the facility.
ADO	» *613-3.1(b)(6)(ii):* The solenoid valve/anti-siphon valve was not installed adjacent to and downstream of the operating valve. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must install the solenoid valve/anti-siphon valve in the correct location and submit a photograph showing the relocated valve.
AO	» *613-1.12 / 3.1(b)(6)(ii):* The solenoid valve/anti-siphon valve is inoperable. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must repair or replace (and submit repair/replacement documentation for) the solenoid valve/anti-siphon valve.
CO	» *613-1.12 / 3.1(b)(6)(iii):* The backflow check valve is inoperable. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must repair or replace (and submit repair/replacement documentation for) the check valve.
OO	» *613-1.12 / 3.1(b)(6)(iv):* The operating valve is inoperable. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must repair or replace (and submit repair/replacement documentation for) the operating valve.

Valve Types

Shear Valve



Shear valves are (typically) mechanical valves attached to pressurized piping beneath a dispenser and anchored to a metal armature within the under-dispenser containment. These valves are designed to automatically stop the flow of motor fuel should the dispenser become dislodged from its base (commonly due to vehicular collisions with the dispenser).

The valve has a shear point/plane – the weakest point in the valve, which must be set at the right height (i.e., at grade) – and at least one internal, spring-loaded poppet held open by a fusible link (i.e., a metal or plastic truss designed to fail under specific conditions). Shear valves break at the shear point when dispensers become dislodged, and the fusible link either breaks or melts (if a fire occurs), allowing the poppet to close and stopping the petroleum from flowing out of the now-exposed piping.

Issues

- **Proper Shear Valve Installation**

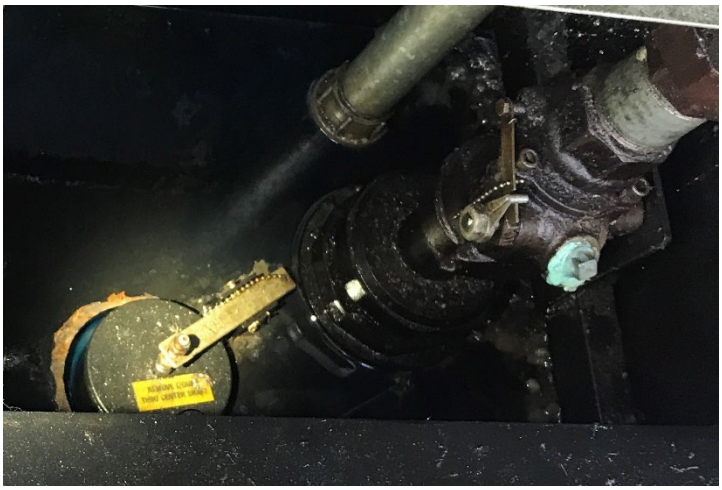
  A common issue with shear valves is incorrect installation. Bolts must anchor the shear valve at the shear point itself such that the shear point is at-grade; this allows the shear valve to activate properly when the dispenser is dislodged. Inspectors should look for any signs of improper installation, such as missing or loose bolts, corroded/damaged supports, and shear valves set higher or lower than grade level.

- **Tampered-With/Disabled Shear Valves**

  Shear valves may at times be tampered with or disabled (due to the cost of replacing it) such that the valve is permanently open, thereby defeating the purpose of the shear valve. Inspectors should look for tools (e.g., socket wrenches, screwdrivers, etc.), wire, or other miscellaneous items attached to the shear valve (where the fusible link would be) and holding the valve open. Shear valves that are missing the fusible link, have been tampered with, or are otherwise disabled must be either repaired or replaced.

- **Shear Valves Associated with Mechanical Float Devices**

  The fusible link holding open the shear valve poppet may sometimes be linked to a mechanical float device located within the under-dispenser containment. The float device will trip the shear valve when liquids are present in the dispenser sump. (Image to the right depicts a shear valve that was tripped by the mechanical float device.)



Solenoid/Anti-Siphon Valve

Solenoid and anti-siphon valves are two types of valves that automatically block the flow of motor fuel when the dispenser is not in use. Such valves are required on dispensing piping (often suction piping) where the petroleum level (in the tank) is normally higher than the dispenser: should either the piping or the dispenser fail, the tank will empty its contents by gravity without these valves.

These valves accomplish the same result but work and are constructed differently.

- Solenoid valves are electrically actuated valves, requiring both power and an electrical signal from the dispenser (i.e., the hook signal) to activate – solenoid valves are normally closed, but open when receiving current/electrical power.
- Anti-siphon valves are hydraulically activated devices that require enough of a vacuum downstream of the valve (e.g., vacuum from a suction pump) to overcome the spring holding the valve closed.

Solenoid and anti-siphon valves are often used in conjunction with operating valves (as required for all piping connected to tanks that could potentially be drained by gravity); these valves must always be installed immediately upstream of any solenoid/anti-siphon valves to provide a manual way of shutting off flow when the solenoid/anti-siphon valve needs to be repaired/replaced. Conversely, any ALLD fitted to the same pressurized piping must be downstream of the solenoid/anti-siphon valve, so the ALLD is not obstructed in detecting leaks.

Issues

- **Solenoid/Anti-Siphon Valve Placement Relative to the Operating Valve**

  Certain solenoid/anti-siphon valves are designed for placement at the highest point of the piping, often supplanting the operating valve. Such valves can only be used if the operating valve is still placed upstream of the solenoid/anti-siphon valve: the flow of petroleum through the solenoid/anti-siphon valve must be stopped before performing repairs/maintenance to avoid spills.

Check Valve

Check valves are designed to ensure that petroleum flows only in one direction and automatically prevent backflow (i.e., spills/overfills) without direct human intervention. These are required for all remote fill pipes where backflow is expected, especially those for tanks that receive pressurized deliveries and either:

- feature both a remote fill and a tank-top fill; or
- have petroleum levels at a higher elevation than the remote fill port (e.g., marina facilities).

Issues

- **Equivalent Devices for Check Valves**

  There are limited situations where the (remote) fill pipe is also used to draw petroleum from the tank, for which a check valve may not be appropriate; for such setups, a readily accessible (or remotely operable) operating valve may be used in lieu of the check valve.

Operating Valve

Operating valves – also known as block valves – allow for manual flow control. These are typically hand-operated mechanical valves (e.g., ball valves), though electronic variants do exist.

These are required on all piping from which the tank may be drained by gravity should a leak occur; as such, they are often used in conjunction with solenoid/anti-siphon valves on dispensing piping. Operating valves must always be installed as close as practicable to the tank connection AND immediately upstream of any solenoid/anti-siphon valves on such lines – this provides a manual way of shutting off flow when the solenoid/anti-siphon valve needs to be repaired/replaced.

Subpart 4
AST Systems

Out-of-Service (OOS) Status and Permanent Closure

Purpose

Out-of-service requirements outline the steps that must be taken to avoid – or at least reduce – unnecessary deliveries, human error, and the resulting spills/releases from tank systems that are not in use, as well as prepare these tank systems for permanent closure if not returned to service. Similarly, permanent closure requirements establish procedures to safely inactivate tank systems, thereby minimizing the risk of (and addressing any) spills/releases that can occur – or are discovered – as they exit the PBS program. Both requirements also reduce the chances of tank abandonment and future environmental/fire safety concerns associated with the tank system.

Requirements

Tank systems are considered out of service (OOS) when:

- taken out of service (e.g., for repairs), by updating the facility registration; or
- no longer receiving or dispensing petroleum.

Facilities that have a tank system out of service for extended periods of time must do the following within the specified timeframes (relative to the date the tank system is rendered out-of-service)[284].

Timeframe	***Actions That Must Be Taken When a SP4 AST System is OOS***

Upon the Tank System becoming OOS	*UNTIL the tank undergoes either a return to service or permanent closure:*
	Continue normal operation/maintenance and periodic inspection/testing/monitoring of:
	• Cathodic protection
	• The following, UNLESS the tank is empty (i.e., the tank has less than 1 inch or 2.5 cm of petroleum):
	  ○ Leak detection
	  ○ Walkthrough inspections

Within 30 Days After	Update the PBS registration to reflect tank status
At 90 Days After	• Empty the tank (so that it has less than 1 inch or 2.5 cm of petroleum) if not yet emptied • Cap/secure all piping/ancillary equipment/manways (but leave vent lines open)
More than 12 Months After	Close the tank system, UNLESS located at a facility with at least one in-service tank system

Tank systems may be brought back into service after having been legally OOS for 12 months or less – doing so requires:

- resuming the requirements suspended due to the tank being empty (either in accordance with the original schedule or upon return to service);
- updating the facility registration (within 30 days of the change); and
- prepping all piping, ancillary equipment, and manways, as necessary.

AST systems, however, may not be returned to service after having been OOS for more than 12 months, UNLESS located on a facility that has at least one tank system in service; if there are no (longer) other in-service tank systems on site, these AST systems must undergo permanent closure[285] and "exit" the scope of the PBS regulations.

[284] Out-of-service requirements for SP4 tank systems are found in 6 NYCRR subdivision 613-4.5(a).
[285] Permanent closure requirements for SP4 tank systems are found in 6 NYCRR subdivision 613-4.5(b).

Permanent closure means undertaking: a complete tank removal; an in-place closure; or a change-in-service (i.e., the tank system is used to store a non-petroleum substance). Facilities with tank systems that undergo permanent closure must do the following within specific timeframes (relative to the closure date).

<table>
<tr><th rowspan="2">Timeframe</th><th colspan="3">Actions the Facility Must Take When a SP4 AST System Undergoes…</th></tr>
<tr><th>Tank Removal</th><th>In-Place Closure</th><th>Change-in-Service</th></tr>
<tr><td>At Least 30 Days Before</td><td colspan="3">Notify the DEC of the closure (i.e., send DEC a pre-work notification), UNLESS the closure is in response to corrective action in accordance with 6 NYCRR Subpart 613-7</td></tr>
<tr><td rowspan="3">Upon Permanent Closure</td><td colspan="2">Perform the tank removal/in-place closure in accordance with PEI RP 1700 (2018)[286]</td><td>Perform the change-in-service in accordance with one of the following[286]:
• API RP 2015 (August 2001)
• API RP 2016 (August 2001)
• NFPA 326 (2010)</td></tr>
<tr><td>• Empty/clean the tank system of liquids/sludge
• Disconnect lines/fill pipes and either:
○ remove the lines; or
○ cap/secure the lines</td><td>• Empty/clean the tank system of liquids/sludge/vapors
• Disconnect lines/fill pipes and either:
○ remove the lines; or
○ cap/secure the lines
• Stencil the tank with the closure date
• Protect the tank from flotation by either:
○ anchoring the tank (and securing all manways to prevent precipitation from seeping into the tank);
○ creating holes through the tank walls; or
○ opening the bottom manway</td><td>Empty/clean the tank system of liquids/sludge/vapors</td></tr>
<tr><td colspan="3">Terminate all petroleum deliveries to the tank system</td></tr>
<tr><td>Within 30 Days After</td><td colspan="3">○ Update the facility registration to reflect tank status
○ Send DEC a copy of the closure report</td></tr>
</table>

[286] Facilities may also comply with a code of practice developed by a nationally recognized association or independent testing laboratory and approved by the DEC.

Permanent closure records consist of the closure report, which must be retained for (at least) three years after closure or until the facility has been permanently closed, whichever is later. This report must have the following information.

	Closure Report

SP4 Closure Records:
 	
Required Information
	• PBS number and site address
	• Date/time of permanent closure
	• General information about the tank:
	  ○ Tank ID number
	  ○ Design capacity
	  ○ Type of petroleum (or a constituent/tracer compound) previously stored
	  ○ Tank manufacturer/model
	• Name of the party (i.e., person/company) who performed the closure
	• Cover letter from the party that performed the closure, indicating the following:
	  ○ History of the tank system
	  ○ Actions taken to close the tank (and the standard by which the closure was performed)
	  ○ That the tank system did undergo proper closure
	• Site diagram showing tank/piping location(s)
	• Photos taken of and notes or field observations made during closure on the following:
	  ○ Any spills found
	  ○ Failed equipment (for tank removal)
	  ○ Whether the piping was removed (or capped and secured in place, and why)
	• Invoices/job tickets for the closure
	• Bills of lading
	• Disposal manifests (for product, sludge, and rinse water pulled from the tank)
	• Tank scrap receipt or other disposal receipt (for tank removal)
	• Evidence that the tank was filled to its design capacity, with a solid inert material (for in-place closure)
	
	If spills were observed during closure, the closure report must also include the following:
	• Site diagram detailing the extent of contamination and excavation, sampling locations, etc.
	• Sampling results and comparison to standards
	• Summary of cleanup performed, including reference to any spills called in (and the spill number(s))

Any contaminated soils/groundwater or petroleum spills observed during closure are considered releases which must be reported to the Spill Hotline within two hours after discovery; corrective action must also begin immediately in accordance with 6 NYCRR Subpart 613-7.

Issues

- **When a Tank Is Considered OOS**

  The minimum length of time for which a tank is not dispensing or receiving petroleum to be considered OOS, is not defined; inspectors are encouraged to use their discretion when determining if the OOS requirements apply to a specific tank system. Tank systems at facilities that do not operate seven days a week (e.g., gas stations, municipal garages, etc.) are not considered OOS when the facility is closed (e.g., during the weekend), but those at facilities that cease operations seasonally (e.g., marinas during the winter season) are indeed OOS during that “closed” period.

- **Advance Notification Prior to Mandatory Closure**

  Tank systems that will not be returned to service in 12 months must be closed permanently the day after the 12-month mark, and DEC be notified at least 30 days in advance of the closure. Facilities are thus advised to ascertain if the tank will return to service within 12 months: the 30-day notice may need to be sent on the 11-month mark if it is not clear that the tank will return to service within 12 months.

  AST systems that are legally OOS for more than 12 months must be closed immediately when there are no longer any in-service tank systems at the site. Facilities are advised to be certain if the OOS tank will ever be returned to service, as they may need to notify DEC of the impending mandatory closure 30 days before the last in-service tank system is no longer in use.

- **Identifying Closed Tank Systems**

  Inspectors should note any tank systems on the site registration that are no longer at the facility – failing to notify DEC of a permanent tank system closure is a violation. Inspectors should follow up with the records the facility has for the tank removal and ensure that the tank system was properly closed.

  Facilities are strongly advised to notify DEC of the removal of any previously, properly closed (in-place) tanks – even if DEC was promptly notified of its original closure – to formally reflect the removal in the facility registration; however, any spills/releases observed during removal must still be reported to the Spill Hotline within two hours after discovery.

- **Bringing Tank Systems that Underwent a Permanent Closure Back into Service**

  Permanent closure is a one-way street. Permanently closed tank systems may not be brought back into service (like legally out-of-service tank systems), as these are considered to have exited the scope of the PBS regulations. Reusing such tanks – at any location to store petroleum – means re-entering the scope of the PBS regulations as new installations AND meeting all pertinent standards/requirements for the latest Category before use. To this end, facilities can obtain a recertification from either the original tank manufacturer (for shop-fabricated tanks), or from the professional engineer[287] (PE) in charge of rebuilding and/or modifying the tank (for field-fabricated tanks).

- **Storing a Different Type of Petroleum**

  Storing a different type of petroleum (such that the applicable Subpart changes) does not constitute a change-in-service and does not make the tank a newly installed tank; as such, the tank does not need to meet newer Category standards.

- **Compartmented Tanks, Siphoned Tanks, and Tanks with Manifolded Piping**

  Each compartment in a compartmented tank is treated under the PBS regulations as a separate tank because petroleum levels in these compartments do not equilibrate or interact in any way; however, each compartment is part of the same tank system as each compartment fits within the same shell. Compartments that are not in service must be closed in-place, but the requirement for filling with an inert material is waived unless all compartments are to be closed.

  Siphoned tanks (i.e., tanks connected via piping that acts as a siphon) are treated as a single tank as petroleum levels within them equilibrate; while such tanks are considered part of the same tank system, closing one of the siphoned tanks may be done (normally) without closing both tanks, as long as the tank that remains in service can act as a standalone tank.

  Similarly, tanks with manifolded piping (i.e., tanks with piping connected downstream of their respective submersible pumps, supplying a single combined pipe) generally behave like independent tanks: the tank volumes are not combined when in the tanks, and a failure in either tank will not affect the amount of product in the other tank. Such tanks are considered to be part of different tank systems and can be closed independently.

[287] This PE must be licensed and registered in New York State (NYS) by the NYS Education Department under Title 8, Article 145 of the Education Law.

Questions

OC_rc	***What's the tank system's status?***
OC_ri	***Is the registered tank status accurate?*** ***Note: if the tank is actually closed/out of the PBS program, note the closure date in Tank System Information.***
Y	» No issues were found under this question.
IN	» *613-1.9(a)(4):* The registered tank status is inaccurate. » *Note(s):* This Response does not include expired facility registrations, inaccurate facility information, unregistered tanks, or unregistered facilities; such violations should be captured under Question **REG_info**. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must correct the site registration online to reflect the tank's status. » *Additional Action(s):* The inspector should note the specific inaccuracy with the tank status under Question **OC_rc**, to include it in the list of registration discrepancies (in the NOV) that need to be corrected.
OC_oos	***Is the OOS tank following all pertinent requirements?*** ***Note: AST systems can be OOS beyond 12 months if at a facility with at least one other in-service tank system.***
Y	» No issues were found under this question.
MT	» *613-4.5(a)(3)(i):* The tank system has been out of service for more than 90 days, but the tank has not been emptied. » *Note(s):* The tank is considered empty when it has no more than 2.5 cm (1 in) of residue. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must empty the tank and submit documentation that the tank has been emptied.
VL	» *613-4.5(a)(3)(ii):* The tank system has been out of service for more than 90 days, but the vent lines have been closed prematurely. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must open the vent lines and submit a photograph showing the open vent lines.
PCS	» *613-4.5(a)(3)(iii):* The tank system has been out of service for more than 90 days, but the piping/ancillary equipment/ports/manways have not yet been capped/secured. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must cap/secure the piping/ancillary equipment/ports/manways and submit a photograph showing the capped/secured equipment.
12M	» *613-4.5(a)(4):* The tank system has been out of service for more than 12 months but has not yet been permanently closed. » *Note(s):* Out-of-service AST systems can continue to be (legally) OOS for more than 12 months if there is at least one in-service tank system – UST or AST – at the facility. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to permanently close the tank system (in accordance with an appropriate code of practice) within 60 days after the date of the NOV.

OC_pc	***Did the permanently closed tank undergo proper closure?***
Y	» No issues were found under this question.
PRN	» *613-4.5(b)(1):* A pre-work notification was not submitted to the DEC at least 30 days prior to permanent closure of the tank system. » *Note(s):* Failure to notify the DEC prior to closure is a violation without a (direct) curative measure; however, it should still be treated as a separate/distinct violation from not keeping registration information current and accurate (Question **REG_info**, Response **IN**). » *Curative Measure(s):* If the site registration has yet to be updated, within 7 calendar days after the date of the NOV, the facility must correct the site registration online (to reflect the date of closure) and – if necessary – submit the closure report detailing that the tank system underwent proper closure in accordance with an appropriate code of practice.
IM	» *613-4.5(b)(4)(i) – (iii):* The tank system did not undergo proper permanent closure (in accordance with an appropriate code of practice). » *Note(s):* The closure report is the primary evidence that the tank system underwent proper permanent closure; if the closure was performed properly, but either a copy of the closure report was not submitted to the DEC within 30 days after closure, or the closure report is not being retained for at least three years after tank system closure or until the facility has been permanently closed (whichever is later), Response **NR** or **NSC** under Question **OC_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to permanently close the tank system (in accordance with an appropriate code of practice) or be brought into compliance with all requirements of the PBS regulations, within 60 days after the date of the NOV. » *Additional Action(s):* A tank that was removed improperly may require further action (i.e., perform a site assessment) to ensure that the surrounding environment was not negatively impacted.
OC_rec	***Are the closure records being retained?*** ***Note: records must be retained for 3 years after permanent closure or until the facility has been permanently closed, whichever is later.***
Y	» No issues were found under this question.
NR	» *613-4.5(c):* The closure records are not being retained for at least three years after tank system closure or until the facility has been permanently closed (whichever is later). » *Note(s):* Closure records are the primary evidence that the tank system underwent proper permanent closure; if the records cannot be produced AND copies were not submitted to the DEC in a timely fashion, the tank system likely did not undergo proper closure (and Response **IM** under Question **OC_pc** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit the missing closure records. » *Additional Action(s):* The inspector may provide a copy of the missing records to the facility if the copies were previously sent to DEC and the facility does not have their own copy.
NSC	» *613-4.5(c):* A copy of the closure report was not submitted to the DEC within 30 days after permanent closure of the tank system. » *Note(s):* The closure report is the primary evidence that the tank underwent proper permanent closure; if the report cannot be produced AND a copy was not submitted to the DEC within 30 days after closure, the tank likely did not undergo proper closure (and Response **IM** under Question **OC_pc** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit documentation proving that the tank system underwent proper closure (in accordance with an appropriate code of practice).

Tank System: Design/Construction & Compatibility, Installation, Repair

Purpose

Tank systems must be designed, constructed, and installed to meet certain standards/codes of practice, to ensure that they can safely store petroleum. And when tank system components inevitably fail – despite proper construction/installation and timely upkeep – the equipment must be repaired or replaced accordingly to return it to proper working condition before being brought back into service. These actions help reduce the likelihood of future spills/releases from the tank system.

Requirements

Design, Construction, and Compatibility

Design and construction standards address the technical aspects (e.g., materials used, dimensions, compatibility, etc.) of tank system components that routinely contain petroleum[288]. These standards were created through (ongoing) rigorous testing and empirical data collection by various independent third-party testing laboratories. Newer and better technologies are adopted over time, requiring even more stringent standards for the latest available equipment.

Such requirements in the PBS regulations are either explicitly listed design/performance standards or industry-recognized standards and largely differ based on Category (or installation date). Construction requirements for newly installed tank system components are generally not retroactive (i.e., components for old tank systems may – but are not required to – meet newer standards). (Details on design/construction standards for non-primary containment equipment – secondary containment, cathodic protection, valves, etc. – are found in their individual sections in this document.)

[288] 6 NYCRR subdivision 613-1.3(bd): *Primary containment* means any tank, piping, or ancillary equipment which, under normal operating conditions, routinely contains petroleum. This generally excludes fill pipes and vent pipes, among others.

Aboveground tanks[289] must meet one of the following design/construction standards[290,291] (as applicable).

<table>
<tr><th>Design and Construction: SP4 Tanks</th><th>Cat. 1 Aboveground Tank[292]</th><th>Cat. 2 Aboveground Tank</th><th>Cat. 3 Aboveground Tank</th></tr>
<tr><td rowspan="3">Steel Tanks[293]

Compliance with these standards is required only for tanks with a design capacity of at least 60 gallons.</td><td colspan="2">Any Cat. 3 standard</td><td>• API Standard 620 (February 2008)
• API Standard 650 (March 2013)
• UL 80 (September 2007)
• UL 142 (December 2006)
• ULC-S601-07 (2007)</td></tr>
<tr><td>Any Cat. 2 standard</td><td>• API Standard 620 (September 1982; rev. April 1985)
• API Standard 650 (February 1984)
• CAN4-S601-M84 (1984)
• CAN4-S630-M84 (1984)
• UL 142 (January 1985)</td><td></td></tr>
<tr><td>No standard(s) specified</td><td></td><td></td></tr>
<tr><td rowspan="3">Tanks Constructed of Alternative Materials[293]</td><td colspan="2">Any Cat. 3 standard</td><td rowspan="2">Tanks that store Class IIIB petroleum AND would not be exposed to Class I/II petroleum[294] spills:
• UL 2258 (August 2010)</td></tr>
<tr><td>No standard(s) specified</td><td>Tanks that store Class IIIB petroleum AND would not be exposed to Class I/II petroleum[294] spills:
• No standard(s) specified</td></tr>
<tr><td></td><td colspan="2">Any acceptable industry standard (with a DEC-approved variance)[295]</td></tr>
</table>

[289] Tanks in inaccessible areas may not feasibly meet the standards for underground tanks and may instead meet standards for aboveground tanks in 6 NYCRR paragraph 613-4.1(b)(1), as appropriate.
[290] Facilities may also comply with a code of practice developed by a nationally recognized association or independent testing laboratory and approved by the DEC.
[291] Design/construction standards for SP4 tanks are found in 6 NYCRR paragraph 613-4.1(b)(1).
[292] Cat. 1 tanks were not required to follow specific construction standards to avoid retroactive imposition of then-new requirements. Design/construction requirements for Cat. 1 tanks mostly pertain to secondary containment. See **Secondary Containment** on p. 323.
[293] Cat. 2/3 aboveground tanks must be constructed of steel; however, those that store Class IIIB petroleum (i.e., petroleum that has a flash point of at least 200 °F/93 °C) and would not be exposed to spills of Class I or Class II petroleum, may be constructed of alternative materials and in accordance with an alternative design/construction standard without a DEC-approved variance.
[294] Petroleum classes are described in NFPA 30, 2012 edition.
[295] Certain petroleum types/mixtures are incompatible with steel tanks; such (non-Class IIIB) petroleum types/mixtures may be stored in tanks constructed of alternative materials (and in accordance an alternative design/construction standard) with a DEC-approved variance.

Piping in contact with the ground must meet the following design/construction requirements[296] (as applicable).

Design and Construction: SP4 Piping	***Cat. 1 Piping***[297]	***Cat. 2 Piping***	***Cat. 3 Piping***

Noncorrodible Piping[298]	No standard(s) specified	Designed and constructed (and installed) with access ports to permit tightness testing without the need for extensive excavation	Designed and constructed:
			• in accordance with one of the following[290]:
			  ○ UL 971 (February 2006); or
			  ○ ULC-S660-08 (2008); and
			• (installed) with access ports to permit tightness testing without the need for extensive excavation

Cathodically Protected[299] ***Metal Piping***	No standard(s) specified	Designed and constructed (and installed) with access ports to permit tightness testing without the need for extensive excavation	Designed and constructed: • in accordance with UL 971A (October 2006)[290]; and • (installed) with access ports to permit tightness testing without the need for extensive excavation
Piping Constructed of Alternative Materials[300]	No standard(s) specified		

Piping associated with field-constructed tanks (FCTs) with a design capacity greater than 50,000 gallons, may also comply with the following alternative standards[301] (as applicable) in lieu of their equivalent conventional counterparts.

Design and Construction: Piping Associated with SP4 FCTs (> 50k gal.)	***Cat. 1 Piping***[302]	***Cat. 2 Piping***[302]	***Cat. 3 Piping***
Noncorrodible Piping			Designed and constructed in accordance with DoD UFC 3-460-01 (2018)[290]
Cathodically Protected Metal Piping	No standard(s) specified[303]		

[296] (Conventional) Design/construction standards/requirements for SP4 piping (and ancillary equipment) are found in 6 NYCRR paragraph 613-4.1(b)(2).
[297] Cat. 1 piping were not required to follow specific construction standards to avoid retroactive imposition of then-new requirements.
[298] Noncorrodible piping should not be used as on-ground piping as these could melt and cause spills/releases when exposed to fire.
[299] Cathodic protection systems for Cat. 3 piping must be designed, fabricated, and installed in accordance with one of the following: API RP 1632 (January 2006; revised 2002); NACE SP0169-2013 (2013); NACE SP0285-2011 (2011); STI R892 (January 2006).
[300] Certain Cat. 1 piping had constructions/materials different from the first two mentioned above (i.e., FRP, cathodically protected steel); these alternative constructions were grandfathered into the PBS regulations to avoid the retroactive imposition of then-new requirements. These, however, are unique to/acceptable for only Cat. 1 piping.
[301] Alternative design/construction standards/requirements for piping associated with SP4 FCTs (> 50k gal.) are found in 6 NYCRR paragraph 613-4.1(c)(2).
[302] The alternative design/construction requirements allowed for Cat. 1/2 piping associated with FCTs (> 50k gal.) mostly pertain to corrosion protection. See **Corrosion Protection** on p. 335.
[303] Cathodic protection systems for Cat. 1/2 piping associated with FCTs (> 50k gal.) must be designed, fabricated, and installed in accordance with NACE SP0169-2013 (2013).

SP4 tank systems must be proven to meet the required design/construction standards and be compatible[304] with the petroleum type being (or to be) stored in the system. For tank systems storing biofuel blends[305] that are either more than 10% ethanol (>E10), or more than 20% biodiesel (>B20), one of the following compatibility records must be maintained until the tank system undergoes permanent closure:

- Certification or listing of the tank system equipment by a nationally recognized, independent testing laboratory for use with the stored biofuel blend
- Equipment manufacturer's approval in writing, indicating an affirmative statement of compatibility and specifying the range of biofuel blends with which the tank system equipment is compatible

Inspectors may request design/construction and/or compatibility documentation from the facility when they have doubts about the construction of a particular tank system equipment; tank systems for which these records cannot be produced or which cannot be proven to meet the required construction/design standards, must either be repaired/retrofitted to meet these requirements, or be closed[306].

[304] Compatibility requirements for SP4 UST systems are found in 6 NYCRR paragraph 613-4.1(b)(7) and subdivision 4.2(c). Facilities must have these records when the tank system starts storing petroleum blends higher than E10/B20.
[305] Biofuel blends are identified by the blend's ethanol or biodiesel content by volume.
[306] Tank closure must be performed in accordance with 6 NYCRR subdivision 613-4.5(b).

Installation

Tank system equipment must be installed as designed so they work as intended. AST system components must meet the following installation requirements[307] (as applicable).

<table>
<tr><th></th><th>Cat. 1 Tank System Components</th><th>Cat. 2 Tank System Components</th><th>Cat. 3 Tank System Components</th></tr>
<tr><td rowspan="2">SP4 AST Systems:

Installation Requirements</td><td rowspan="2">No requirements specified[308].</td><td>• Components must be installed in accordance with:
○ the manufacturer's instructions; AND
○ NFPA 30 (1984).
• Tanks must have been tightness tested[309] (as installed) before first receipt of petroleum.</td><td>• Components must be installed in accordance with NFPA 30 (2012)[290].
• Tanks (as installed) must have undergone the following before first receipt of petroleum:
○ a tightness test[309]; AND
○ an inspection in accordance with one of the following[290]:
▪ API Standard 650 (March 2013);
▪ API Standard 653 (April 2009);
▪ NFPA 30 (2012);
▪ PEI RP200 (2013);
▪ STI SP001 (September 2011); or
▪ UL 142 (December 2006).
Records of the tightness test and inspection must be retained for five years after installation; copies must also be sent to DEC.</td></tr>
<tr><td colspan="2">• Piping in contact with the ground must have been tightness tested[310] (as installed) before being covered/enclosed/placed in use.
• Joints must be liquid-/air-tight.
• Tanks, piping, and distribution equipment (e.g., loading/transfer racks, etc.) must not have been located along highway curves or otherwise exposed to traffic hazards.
• AST systems must be supported on a well-drained, stable foundation which:
○ prevents movement, rolling, or settling of the tank; and
○ is designed to minimize corrosion of the tank bottom[311].
• On-ground tanks (i.e., tanks not entirely aboveground on racks, cradles, or stilts) must[312] either be underlain by an impermeable barrier or have double-bottom construction.</td></tr>
</table>

Tanks located in an area where the tank may become buoyant due to a rise in the water table, flooding, or accumulation of water (from fire suppression operations), must also have uplift protection. In general:

- Tanks must be located accordingly to take into consideration the local flood stage and anchored properly – or otherwise protected – to prevent movement/flotation and collapse.
- All valves and other openings must either be extended above the maximum flood stage water level or be able to be closed and secured in a locked position in advance of a flood.

For more information on flooding safeguard requirements, see section 2-5.6 of NFPA 30 (1984) (for Cat. 1/2 tanks) and sections 22.14 and 23.14 of NFPA 30 (2012) (for Cat. 3 tanks), as applicable.

[307] Installation requirements for SP4 tank system equipment are found in 6 NYCRR subdivision 613-4.2(a).
[308] Cat. 1 tank systems were not required to meet any installation requirements to avoid retroactive imposition of then-new requirements.
[309] The tank tightness test must have been performed in accordance with 6 NYCRR paragraph 613-4.3(c)(1).
[310] The line tightness test must have been performed in accordance with 6 NYCRR paragraph 613-4.3(d)(2).
[311] Facilities should ensure that the base of the tank is coated – or otherwise protected – to prevent corrosion and deterioration (particularly for field-constructed, single-bottom, on-ground tanks): channels molded/cut/built into the barrier often expose the tank to air, which could induce corrosion in the tank bottom, as could (compacted) sand either under the tank or in the double-bottom interstice.
[312] For more information on requirements applicable to impermeable barriers/double-bottoms, see **Secondary Containment** on p. 323.

Repairs

Any issues with the tank system that could lead to a leak or release must be addressed appropriately to prevent them from occurring.

SP4 Repairs and Modifications	***Leak-Imminent Situations***	***Leak-Probable Situations***
Tank System Issue	• Tank system component(s) is not adequate/tight. • Continuation of an operation/practice will result in a leak.	• Tank system component(s) is malfunctioning or in disrepair, and a leak is likely unless action is taken. • Continuation of an operation/practice will likely result in a leak unless action is taken.

Required Course of Action
 	
(One of these must be performed as appropriate/necessary.)
	• Operation/practice must be modified or discontinued immediately.
	• Component(s) must be replaced immediately.
	• Tank system must be either:
	  ○ emptied and taken out of service[313] immediately, and repairs (and subsequent testing) must be performed; or
	  ○ permanently closed[313].
		• Operation/practice must be modified or discontinued immediately.
		• Component(s) must be replaced within 90 days (UNLESS DEC deems a shorter time necessary).
		• Tank system must be either:
		  ○ taken out of service[313] immediately, and repairs (and subsequent testing) must be performed; or
		  ○ permanently closed[313].

[313] Tank systems must be either taken out of service or permanently closed in accordance with 6 NYCRR subdivision 4.5(a) or (b), respectively.

Repairs must be permanent, be at least as protective as either the original construction standard(s) or the manufacturer's specifications and meet the following specific requirements[314] (as applicable).

SP4 Component	***SP4 AST Systems: Specific Repair Requirements***	
	Repair ***(must be conducted in accordance with one of the following[290]…)***	***Post-Repair***
Tanks	No standard(s) specified[315] *Note:* steel tanks must be repaired either with steel welds or steel patches that are welded in place.	• *Perform/Pass:* All of the following, as applicable: ○ Tank tightness testing[316] (0.1 gph), within 30 days after repair, UNLESS the tank is internally inspected in accordance with one of the following (as applicable): ▪ API Standard 653 (April 2009) (for field-constructed tanks); or ▪ STI SP001 (September 2011) (for shop-fabricated tanks) ○ Cathodic protection testing[317] within six months after repair (for cathodically protected steel tanks) ○ Impressed current inspection[317] within 60 days after repair (for cathodically protected steel tanks with impressed current systems) • *Retain (Repair and Post-Repair) Records:* Until the tank system is permanently closed ○ *Send DEC Copies of Tightness Test Results:* Within 30 days after the test is performed
Piping and Fittings	No standard(s) specified[315] *Note(s):* • Metal piping/fittings from which petroleum has leaked cannot be repaired: they must be replaced. • Noncorrodible piping/fittings from which petroleum has leaked may be repaired or replaced. • A new piping run must be installed when 50% (or more) of the piping run (in question) is removed for repair/replacement, UNLESS the piping meets the design and construction requirements for Cat. 3 piping.	• *Perform/Pass:* All of the following as applicable: ○ Line tightness testing[318] (0.1 gph, and 1.5 times the normal operating pressure), within 30 days after repair, UNLESS the piping/fitting is Cat. 1 piping/fitting associated with a FCT with a design capacity > 50k gal. AND undergoes bulk piping tightness testing[319] instead ○ Cathodic protection testing[317] within six months after repair (for cathodically protected steel piping and fittings) ○ Impressed current inspection[317] within 60 days after repair (for cathodically protected steel piping and fittings with impressed current systems) • *Retain (Repair and Post-Repair) Records:* Until the tank system is permanently closed ○ *Send DEC Copies of Tightness Test Results:* Within 30 days after the test is performed
Leak Detection Equipment	No standard(s) specified[315] *Note:* repair requirements do not apply to handheld LD equipment.	• *Retain (Repair[320]) Records:* Until three years after repair
Cathodic Protection Systems	No standard(s) specified[315]	• *Perform/Pass:* All of the following (as applicable): ○ Cathodic protection testing[317] within six months after repair ○ Impressed current inspection[317] within 60 days after repair (for impressed current systems) • *Retain (Repair and Post-Repair) Records:* Until the tank system is permanently closed

[314] Repair requirements for SP4 tank systems are found in 6 NYCRR subdivision 613-4.2(j).
[315] These repairs are not required to meet any specific standards, but facilities are advised to follow the equipment manufacturer's standards/specifications.
[316] Tank tightness testing must be performed in accordance with 6 NYCRR paragraph 613-4.3(c)(1).
[317] CP testing and IC inspections must be performed in accordance with 6 NYCRR paragraphs 613-4.2(i)(2), (3), respectively.
[318] Line tightness testing must be performed in accordance with 6 NYCRR paragraph 613-4.3(d)(2).
[319] Bulk piping tightness testing must be performed in accordance with 6 NYCRR paragraph 613-4.3(d)(3).
[320] Post-repair testing of LD equipment is not required as long as the equipment is shown to be functional after the repair. Nevertheless, facilities are strongly advised to retain repair records until the tank system is permanently closed.

Repair (and post-repair) records must generally have the following information.

	Repair/Post-Repair Records

SP4 Repair Records:
 	
Required Information
	• Tank ID number
	• Identification of the repaired equipment
	• Date(s) of the repair
	• Notes on any spill/release from the repaired equipment
	• Description of the following:
	  ○ Nature of the repair
	  ○ Standard to which the repair was conducted (if necessary)
	  ○ Details regarding the post-repair inspection/testing/monitoring performed to verify that the repair was effective (depending on the type of equipment repaired), including the results, as necessary
	• A signed statement from the person who performed the repair, that the component underwent a repair that is:
	  ○ permanent; and
	  ○ equal to (or more protective than) the standards of original construction or manufacturer's specifications.

Facilities are also advised to keep records as to what prompted the equipment repair/replacement.

Issues

- **Underground Tanks and Drums/Containers Used as Aboveground Tanks**

  Tank system equipment must be used as intended. However, inspectors may run into underground tanks being used aboveground, which are illegal (particularly under the Fire Code) and need to be permanently closed: underground tanks often have narrower vent pipes and no emergency pressure relief valve that allow a tank to breathe during a fire. Underground tanks are also constructed of a thinner material (compared to aboveground tanks) that requires external support in the form of backfill; without it, underground tanks tend to sag when placed aboveground, stressing the tank material (which could lead to a leak/release).

  Inspectors may also find an aboveground tank with bungs on the side. This could be another sign that the tank was not designed/intended to be used aboveground, as tanks typically – though not always – have bungs at the top relative to their intended orientation (i.e., horizontal, or vertical).

  Aboveground tanks are also seldom made of fiberglass-reinforced plastic (FRP); inspectors that encounter FRP ASTs are advised to confirm that the tank is storing a Class IIIB petroleum and ask for the variance approving use of the non-metallic tank.

  Any drums and containers used as ASTs are also illegal, as these may not be able to withstand fires and are likely being used incorrectly (per their original design). Inspectors are advised to refer such setups to the local agency enforcing the Fire Code.

- **Piping in Rock Guards**

  Piping in rock guards are considered to be *in contact with the ground*[321], as the rock guard is considered to be a 'material' covering the piping; however, any piping within a rock guard is considered to be noncorrodible piping.

- **Tank System Components Made of Copper or Galvanized Steel (and Other Non-Steel Metals)**

  Modern tank systems rarely have copper or galvanized steel components, but inspectors will run into them occasionally. These components count as metal components that are not inherently corrosion-resistant and thus require cathodic protection (as with cathodically protected steel). The applicable design/construction standards for these components may be fewer than those for steel components, but these non-steel metals are acceptable construction materials (unless there are compatibility issues with the stored petroleum).

[321] Defined in 6 NYCRR subdivision 613-1.3(ak).

- **Bringing Out-of-Service (OOS) SP4 Systems Back into Service**

  An SP4 tank system may be brought back into service after having been legally OOS for 12 months or less.

  An SP4 tank system, however, may not be returned to service if it has been OOS for more than 12 months (unless located at a facility with at least one tank system in service). These tank systems must be closed and reusing such a tank – at any site – is tantamount to installing a new tank under the PBS regulations. The tank (system) must then meet all standards/requirements for the latest Category (at the time of installation), as certified by the original tank manufacturer as being equivalent to a new tank.

- **Bringing Tank Systems that Underwent a Permanent Closure Back into Service**

  Permanent closure is a one-way street. Permanently closed tank systems may not be brought back into service (like legally out-of-service tank systems), as these are considered to have exited the scope of the PBS regulations. Reusing such tanks – at any location to store petroleum – means re-entering the scope of the PBS regulations as new installations AND meeting all pertinent standards/requirements for the latest Category before use. To this end, facilities can obtain a recertification from either the original tank manufacturer (for shop-fabricated tanks), or from the professional engineer[322] (PE) in charge of rebuilding and/or modifying the tank (for field-fabricated tanks).

- **Using Tank Systems that Previously Stored Non-Petroleum Substances**

  Any tank system – that had never held petroleum – to be used as a PBS tank system, is considered a new installation (i.e., it enters the scope of the PBS regulations). The tank system must then meet – and be proven to meet – all pertinent standards/requirements for the latest Category (as the time it stores petroleum), as certified by the original equipment manufacturer as being equivalent to new components.

- **Changing Subpart Applicability**

  Tank systems may undergo a change (e.g., storing a different type of petroleum, increasing/decreasing the volume of the tank system covered by materials) that results in a change in applicable Subpart. Tank systems in such cases must meet – and be proven to meet – all requirements under the new Subpart prior to (or as part of) the change. (Unless the change involves a physical reinstallation or permanent closure, the tank Category does not change; however, moving the tank may invalidate the design/construction standard listing.)

- **Justification for Installation Height of Overfill Prevention Valves**

  Inspectors who encounter tanks with either automatic shutoff valves or ball float valves not set to activate at either 95% or 90% of the design capacity, respectively, should verify that the overfill prevention equipment is installed correctly, by reviewing either the installation records or the delivery records. Installation records should include calculations that justify the alternative actuation height.

- **Check Valve Placement for Suction Piping**

  Facilities are responsible for providing evidence that they have safe suction piping (based on the placement of their check valves) and are therefore exempt from piping leak monitoring. Installation records should have this information and be available at the time of inspection.

[322] This PE must be licensed and registered in New York State (NYS) by the NYS Education Department under Title 8, Article 145 of the Education Law.

Questions

TS_cs	***Does the tank system meet pertinent construction standards?***
Y	» No issues were found under this question.
TC	» *613-4.1(b)(1)(ii) / 4.1(b)(1)(iii):* The tank does not meet applicable design/construction requirements. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to permanently close the tank system within 60 days after the date of the NOV.
XTT [SP3/SP4/SP5]	» Meeting design/construction standards is not required because the tank is either an SP4/SP5, Cat. 1 AST or a SP4/SP5, Cat. 2/3 AST with a design capacity less than 60 gallons.
PC	» *613-4.1(b)(2)(ii) / 4.1(b)(2)(iii):* The piping does not meet applicable design/construction requirements. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to either replace the piping or permanently close the tank system, within 60 days after the date of the NOV.
XTP [SP3/SP4/SP5]	» Meeting design/construction standards is not required because the piping is Cat. 1 piping associated with a SP4/SP5 AST system.
TS_bf	***Is the entire tank system compatible with the stored petroleum?***
Y	» No issues were found under this question.
CI	» *613-4.1(b)(7):* The tank system is not compatible with the stored petroleum. » *Note(s):* Compatibility documentation is the primary evidence that the tank system is compatible with biofuel blends greater than E10/B20; if a tank system component is compatible, but documentation is not being retained at least until tank system closure, Response **NR** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to permanently close the tank system within 60 days after the date of the NOV.
NR	» *613-4.2(c)(2):* Compatibility documentation is not being retained for one or more tank system components, at least until the tank system (storing biofuel blends greater than E10/B20) is permanently closed. » *Note(s):* Compatibility documentation is the primary evidence that the tank system is compatible with biofuel blends greater than E10/B20; if the documentation is missing, the tank system component is likely not compatible (and Response **CI** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either: obtain (and submit) the compatibility documentation; submit a plan to replace the incompatible component(s) with compatible equipment within 90 calendar days after the date of the NOV; or submit a plan to permanently close the tank system within 60 days after the date of the NOV.
XP	» Compatibility documentation is not required because the tank system is not storing a biofuel blend greater than E10/B20.

TS_rat	***If repairs were made, are the repairs appropriate/adequate, and was the equipment tested after the repair?***
Y	» No issues were found under this question.
IN	» *613-4.2(j)(3) – (7):* The repairs made to a tank system component were inappropriate/inadequate. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either: take the tank system out of service and submit a plan to properly repair the tank system component within 90 calendar days after the date of the NOV; or submit a plan to permanently close the tank system within 60 days after the date of the NOV.
NIT	» *613-4.2(j)(8) – (9):* An appropriate inspection/test was not performed for the tank system component after the repair. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a tightness test.
XP	» A tightness test is not required because either the tank system component is being monitored for leaks at least weekly, or the repaired tank was internally inspected following the repair.

Walkthrough Inspections

Purpose

Walkthrough inspections are periodic rounds of the facility, designed to familiarize operators with their facility/equipment and make them aware of any issues that have occurred (or have yet to occur) with the tank system – this reduces the risk of equipment failure and spills/releases that follow. Operators performing site inspections are more likely to catch and address such issues (sooner) than those relying solely on alarms.

Requirements

Walkthrough inspections for (in-service, non-empty) SP4 tank systems[323] are external assessments of visible/accessible tank system components, that must be performed[324] every 30 days and must identify the following issues (as applicable).

	SP4 Components	***Issues to be Identified***

30-Day Walkthrough Inspections:
 	
Specific Requirements
	• Tank
	• Accessible portions of piping/ancillary equipment
	• Leak detection equipment
	  ○ Leak monitoring methods/equipment built into the impermeable barrier/double-bottom (for tanks that are not entirely aboveground)
	• Secondary containment
	  ○ Interstitial space (for traditional and modified double-walled tanks)
	  ○ Impermeable barriers (i.e., concrete pads and double bottoms)
	• Insulation (for insulated tanks storing heated petroleum)
	• Concrete encasements (for tanks)
	• Cathodic protection equipment
	• Overfill prevention equipment, and any other monitoring/warning system in place
		• Leaks/releases
		• Cracks
		• Worn areas
		• Corroded/thinned areas
		• Poor operating and maintenance practices
		• Excessive settling of structures/tank system equipment
		• Separation/swelling of tank insulation
		• Malfunctioning equipment
		• Structural/foundation weaknesses

A leak is suspected (during the walkthrough inspection) when:

- petroleum is found in the secondary containment (e.g., interstice of a double-walled tank) or otherwise outside the primary containment[325]; or
- the leak detection equipment indicates that a spill/release may have occurred.

Either scenario must be reported to the Spill Hotline within two hours after discovery; the second scenario may not be considered a suspected spill if:

- the leak detection equipment is found to be defective and is repaired/replaced/recalibrated, AND additional monitoring does not confirm the initial results; or
- the results were investigated and determined to be a non-spill event (e.g., caused by dispensing from the tank during testing).

Walkthrough inspection records must be retained for (at least) three years and have the following information.

SP4 Walkthrough Inspection Records: ***Required Information***	***30-Day Walkthrough Inspections***

	• PBS number and site address
	• Tank ID number
	• Date/time of inspection
	• Component(s) inspected
	  ○ Any issues identified
	  ○ Description of actions taken to rectify any issues identified

[323] Walkthrough inspection requirements for SP4 tank systems are found in 6 NYCRR subdivision 613-4.2(h).
[324] 6 NYCRR 613-4.2(h)(3): the AST system must be taken out of service (in accordance with 6 NYCRR subdivision 613-4.5(a)) if any portion of the tank system is not inspected as required.
[325] See **Spills** on p. 460.

Issues

- **Extent of Monthly Walkthrough Inspection Records to be Reviewed**

  Facilities must keep the last year of monthly walkthrough inspection records at any given time (unless the tank has been in service for less than one year), but inspectors are advised to review at least ten of the last 12 months' worth of records. Inspectors have the discretion to review more or less records as necessary depending on the facility's compliance history and whether spills are suspected.

Questions

WT_itm	***Are the inspections being performed periodically?***
Y	» No issues were found under this question.
N30A ***[SP4/SP5]***	» *613-4.2(h)(1) / 4.2(h)(3):* 30-day inspections are not being performed for the AST system. » *Note(s):* Inspection records are the primary evidence that 30-day inspections are being performed; if inspections are being performed, but records are not being retained for at least three years, Response **NR30A** under Question **WT_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must take the AST system out of service and perform (and submit the records of) a 30-day inspection.
P30A ***[SP4/SP5]***	» *613-4.2(h)(1) / 4.2(h)(3):* 30-day inspections are not being performed for the AST system at least every 30 days. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) a 30-day inspection.
WT_rec	***Are the inspection records being retained?*** ***Note: records must be retained for 3 years.***
Y	» No issues were found under this question.
NR30A ***[SP4/SP5]***	» *613-4.2(h)(4):* 30-day inspections are not being recorded, or records are not being retained (for the AST system) for at least three years. » *Note(s):* A facility is considered in compliance if they have records for at least ten of the last 12 inspections. Inspection records are the primary evidence that 30-day inspections are being performed; if the records are missing, inspections are likely not being performed (and Response **N30A** under Question **WT_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records of the last 30-day inspection, or perform (and submit the records of) a 30-day inspection.
WT_com	***Was the inspection complete/adequate?***
Y	» No issues were found under this question.
30EQ ***[SP4/SP5]***	» *613-4.2(h)(1) / 4.2(h)(2):* 30-day inspections do not include all applicable AST system equipment. » *Note(s):* This Response includes any ASTs that aren't being monitored for leaks between the on-ground tank and the impermeable barrier. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) a complete 30-day inspection.
WT_30A	***What's missing from the 30-day (AST system) inspections?***

Leak Detection

Purpose

Leak detection allows facility staff to monitor tank system equipment for spills and any integrity issues and respond to them immediately to keep spills from growing. This in turn helps decrease the chances of those spills reaching the lands and/or waters of the State (and becoming releases).

Requirements

Leak detection refers to assessment methods/equipment that alert the operator to leaks from – and/or integrity issues with – the tank system, specifically the primary containment[326] (that is in contact with the ground). Facilities must meet the following overall leak detection requirements[327] (as applicable).

SP4 Leak Detection	***Requirements***

General[328]	• "Internal" inspections must be:
	  ○ able to assess the integrity/remaining useful life of the tank that is in contact with the ground and routinely contains petroleum;
	  ○ performed in accordance with an acceptable code of practice; and
	  ○ meets specific requirements.
	• LD equipment must be:
	  ○ installed/calibrated in accordance with the manufacturer's instructions (and an acceptable code of practice[329]);
	  ○ able to detect leaks (with a probability of at least 95% and no more than 5% probability of false alarm) from any portion of both the tank and piping that are in contact with the ground and routinely contain petroleum; and
	  ○ meets specific requirements.
	Note: LD requirements are suspended for tank systems that are out of service and empty.

Periodic Equipment Inspections	LD equipment are subject to walkthrough inspections[330] performed every 30 days.
(Suspected) Spill Reporting	Any monitoring results or alarms indicating that a leak may have occurred is considered a suspected leak that must be reported to the DEC Spill Hotline within a specific timeframe; however, this reporting requirement is waived if certain applicable conditions are met[331].

Recordkeeping	*Retain:*
	• *Walkthrough Inspection Records:* For three years
	  ○ *Note:* LD records for the last 30 calendar days – either digital or hard copies – must always be accessible at the facility to help inform any DEC/facility staff responding to spills.
	• *Internal Inspection Results/Records:* For 20 years or until the next inspection, whichever is later[332]
	• *Tightness Test Results:* For ten years or until the next test, whichever is later
	  ○ *Send DEC copies:* Within 30 days after the test is performed

DEC may require facilities to conduct additional inspections/testing if the facility has suspected leaks or inspections/testing that have not been performed. Facilities must complete this additional inspection/testing within ten days after receipt of the request, or DEC will conduct inspections/testing at the facility's expense.

Facilities with inoperative leak detection equipment – especially those that fail the connectivity and/or operability inspections – must immediately repair/replace/recalibrate the equipment, perform a different type of leak detection valid for their tank/piping, or permanently close the tank system[333] (and update the registration accordingly).

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[326] 6 NYCRR subdivision 613-1.3(bd): *Primary containment* means any tank, piping, or ancillary equipment which, under normal operating conditions, routinely contains petroleum. This generally excludes fill pipes and vent pipes, among others. Leak detection requirements also exclude any aboveground piping (not in contact with the ground) from which a leak is readily visible.
[327] Leak detection requirements for SP4 tank systems are found in 6 NYCRR section 613-4.3.
[328] General LD requirements for SP4 tank systems are found in 6 NYCRR subdivision 613-4.3(a).
[329] See **Installation** on p. 294.
[330] See **Walkthrough Inspections** on p. 301.
[331] See **Spills** on p. 460.
[332] This requirement is effective beginning October 17, 2023.
[333] Tank systems must be permanently closed in accordance with 6 NYCRR subdivision 4.5(b).

Conventional Tank and Piping Leak Detection

SP4 tanks that meet the following criteria are required[334] to have (at least) one periodic leak detection method that meets specific requirements.

- Cat. 1 tank with a design capacity greater than or equal to 10,000 gallons
- Cat. 1 tank with a design capacity of less than 10,000 gallons and within 500 horizontal feet of any of the following sensitive receptors:
  - Perennial or intermittent streams
  - Public or private wells
  - Primary or principal aquifers[335]
  - Wetlands[336]
  - Lakes/ponds, estuaries, or other similar surface water bodies
  - Storm drains

However, leak detection is also not required for Cat.1 tanks that are:

- entirely aboveground (i.e., on racks/cradles/stilts) such that the tank bottom is observable;
- part of AST systems storing No. 5/6[337] fuel oil[338]; or
- in compliance with design/construction standards for Cat. 2/3 tanks[339].

Facilities must meet the following requirements for specific tank LD methods.

SP4 Tank LD Method	***Cat. 1 Tank***	***Cat. 2 Tank***	***Cat. 3 Tank***

Internal Tank Inspections [INR]	• *Perform and Record Results:* Every ten years, in accordance with one of the following[340]:
	  ○ API Standard 653 (April 2009) (for field-constructed tanks)
	  ○ STI SP001 (September 2011) (for shop-fabricated tanks)
	• *Retain Records:* For 20 years or until the next inspection, whichever is later[332]		

Tank Tightness Testing [TTT]	• *Acceptable for:* Tanks with a design capacity < 5,000 gal. AND have no manway
	• *Perform and Record Results:* Every ten years
	  ○ *Leak Rate:* 0.1 gph
	• *Retain Records:* For ten years or until the next test, whichever is later
	  ○ *Send DEC Copies:* Within 30 days after the test is performed		

[334] Specific LD requirements for SP4 tanks are found in 6 NYCRR paragraph 613-4.3(b)(1).
[335] These aquifers are defined in USGS Water Resource Investigation Reports 87-4274, 87-4275, 87-4276, 97-4122, 88-4076, and Appendix C.
[336] Wetlands are defined in 6 NYCRR Part 664.
[337] ECL Section 19-0329 prohibits the use of No. 6 fuel oil for heating purposes in NYS, starting on July 1, 2023.
[338] Cat. 1 tanks/piping that are part of tank systems storing other petroleum types, may also be exempted from leak detection requirements based on the viscosity of the stored petroleum (if comparable to that of No. 5/6 fuel oil); however, other factors must be considered as well, including (but not limited to) the presence/absence of substances that would either prevent the stored petroleum from solidifying or cause environmental and/or health concerns, if a spill occurred.
[339] See **Design, Construction, and Compatibility** on p. 290.
[340] Facilities may also comply with a code of practice developed by a nationally recognized association or independent testing laboratory and approved by the DEC.

Leak detection requirements for SP4 piping[341] (in contact with the ground) are generally split between two very different piping types:

- *Pressurized piping* conveys petroleum under pressure produced by a submersible turbine pump (STP) located at the tank.
    - One submersible turbine pump (STP) can transmit petroleum to multiple dispensers/equipment.
    - Pressurized piping is preferred – and historically more common/cheaper than suction piping – at facilities in the US that have high throughput, due to the STP's ability to provide higher flowrates to more dispensers/equipment.
    - This higher flowrate often magnifies the volume of piping leaks, potentially leading to greater environmental contamination and higher cleanup costs.
- *Suction piping* conveys petroleum under vacuum produced by a suction pump located away from the tank.
    - Each suction line requires a suction pump.
    - Suction piping is commonly limited to facilities with low throughput because suction pumps are not as robust as STPs and can only provide lower flowrates through the dispenser/equipment.
    - Leaks from suction piping are generally smaller in volume compared to those from pressurized piping, leading to less serious environmental contamination (and relatively lower cleanup costs).

SP4 pressurized and suction piping must have at least one periodic leak detection method (that meets specific requirements), except for:

- Cat. 1 piping that are part of AST systems storing No. 5/6[337] fuel oil[338];
- Cat. 1 piping that meets design/construction standards for Cat. 2/3 piping[339];
- Cat. 2/3 suction piping; and
- Cat. 2/3 pressurized piping that <u>are not</u> part of AST systems storing motor fuel.

However, all Cat. 2/3 pressurized piping that are part of AST systems storing motor fuel, must be equipped with an automatic line leak detector (ALLD).

Facilities must meet the following requirements for specific piping LD methods.

SP4 Piping LD Method	***Cat. 1 Piping***	***Cat. 2 Piping***	***Cat. 3 Piping***
<u>Automatic Line Leak Detector [ALLD]</u>	• *Required for:* Cat. 2/3 pressurized piping that are part of AST systems storing motor fuel • *Perform:* Continuously ○ *Leak Rate:* 3 gph (with line pressure at 10 psi within one hour)		

<u>Line Tightness Testing [LTT]</u>	• *Perform and Record Results:* Every ten years
	  ○ *Leak Rate:* 0.1 gph (at 1.5 times the operating line pressure)
	• *Retain Records:* For ten years or until the next test, whichever is later
	  ○ *Send DEC Copies:* Within 30 days after the test is performed		

[341] Specific LD requirements for SP4 piping are found in 6 NYCRR paragraph 613-4.3(b)(2).

Alternative Piping Leak Detection

Leak monitoring for piping associated with field-constructed tanks (FCTs) with a design capacity greater than 50,000 gallons, may be challenging given conventional leak detection methods. Such piping may then comply with the following alternative requirements[342] (as applicable) in lieu of their equivalent conventional counterparts.

SP4 Piping LD Method	***Cat. 1 Piping*** ***(associated with FCTs > 50k gal.)***	***Cat. 2 Piping*** ***(associated with FCTs > 50k gal.)***	***Cat. 3 Piping*** ***(associated with FCTs > 50k gal.)***
Automatic Line Leak Detector [ALLD]	• *Required for:* Cat. 2/3 pressurized piping that are part of AST systems storing motor fuel • *Perform:* Continuously ○ *Leak Rate:* 3 gph (with line pressure at 10 psi within one hour)		
Line Tightness Testing [LTT]	• *Perform and Record Results:* Every ten years ○ *Leak Rate:* 0.1 gph (at 1.5 times the operating line pressure) • *Retain Records:* For ten years or until the next test, whichever is later ○ *Send DEC Copies:* Within 30 days after the test is performed		
Bulk Piping Tightness Testing *(for FCT-associated piping)* ***[BTTF]***	• *Perform and Record Results:* Semiannually / Annually ○ *Leak Rate:* ▪ *Piping Segment Volume (PSV) < 50k gal.:* 1.0 gph (for semiannual BTTF) 0.5 gph (for annual BTTF) ▪ *50k gal. ≤ PSV < 75k gal.:* 1.5 gph (for semiannual BTTF) 0.75 gph (for annual BTTF) ▪ *75k gal. ≤ PSV < 100k gal.:* 2.0 gph (for semiannual BTTF) 1.0 gph (for annual BTTF) ▪ *PSV ≥ 100k gal.* 3.0 gph (for semiannual BTTF) 1.5 gph (for annual BTTF) • *Retain Records:* For ten years or until the next test, whichever is later ○ *Send DEC Copies:* Within 30 days after the test is performed		

Issues

- **Compartmented Tanks, Siphoned Tanks, and Tanks with Manifolded Piping**

  LD methods must account for any special tank setups. Each compartment in a compartmented tank is treated as a separate tank because petroleum levels in these compartments do not equilibrate or interact in any way – as such, each compartment may need its own leak detection method.

  Siphoned tanks (i.e., tanks connected via piping that acts as a siphon) are treated as a single tank as petroleum levels in siphoned tanks equilibrate; however, these tanks must have separate leak detection methods. The siphon between these tanks may need to be broken to perform proper leak monitoring, depending on the LD method employed.

  Tanks with manifolded piping (i.e., tanks with piping connected downstream of their respective submersible pumps, supplying a single combined pipe) generally behave like independent tanks: the tank volumes are not combined when in the tanks, and a failure in either tank will not affect the amount of product in the other tank. Depending on the LD method, the tanks and piping may require separate leak detection equipment (e.g., tightness testing), but they may also simply have to be accounted for in the LD method (e.g., automatic line leak detector).

- **Supplemental Leak Detection Methods/Equipment**

  Additional LD methods (beyond what is mandatory) may be utilized, but facilities must include them in the PBS registration (as space allows). These supplementary LD methods must be maintained and operated in accordance with all pertinent leak detection requirements and are also subject to requirements pertaining to (suspected) spill reporting. However, connectivity and operability inspection requirements do not apply to supplementary LD methods.

[342] Alternative LD requirements for SP4 piping associated with FCTs (> 50k gal.) are found in 6 NYCRR subparagraph 4.3(b)(2)(iii).

- **Gravity-Fed/Gravity Return Piping**

  Piping in which petroleum moves by gravity (i.e., gravity-fed/gravity return piping) is generally treated as suction piping under the leak detection requirements.

- **Leak Detection for Piping Connected to Satellite Dispensers**

  Dispensers may be configured such that there is no direct connection to the tank; the line feeding these satellite dispensers split off from piping connected to a different dispenser. Piping connected to satellite dispensers are still considered to be part of the tank system and are subject to leak detection requirements.

- **Access to the Tank Monitoring Console**

  Inaccessible tank consoles cannot convey alarms to anyone who needs to respond to the alarm/possible spill. The console should not be in a room with restricted access, nor should the space in front of the console be used as storage, as these hamper a staff person's ability to review the console in a timely manner and delays their response to possible/suspected spills.

- **Reviewing Records/Alarms on the Tank Monitoring Console**

  Inspectors, by default, should have the facility staff operate the console to produce the information/records that the inspector wishes to review. Inspectors should step in only when:

  - the facility representative is incapable of operating the console (i.e., is not an operator);
  - the facility representative has given the inspector permission to access the console; AND
  - the inspector has been trained in the use of that specific console make/model.

Questions

LD	***Leak Detection***
LD_trc	***Tank LD Methods: all LD methods that apply to the tank – including those required and any supplementary methods being performed – should be selected.***
TTT	» Tank Tightness Testing
IMP	» Impermeable Barrier/Double-Bottom Monitoring
INR	» Internal Tank Inspections
N	» *613-4.3(a)(1):* The tank is not being monitored for leaks. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid tank leak detection method.
XP	» Leak detection is not required because the tank system is OOS and the (associated) tank is currently empty.
XT [SP4/SP5]	» AST leak detection is not required because there are no corresponding LD requirements.
LD_tri	***Is the registered tank LD method(s) accurate?***
Y	» No issues were found under this question.
IN	» *613-1.9(a)(4):* The registered tank leak detection method(s) is inaccurate. » *Note(s):* This Response does not include expired facility registrations, inaccurate facility information, unregistered tanks, or unregistered facilities; such violations should be captured under Question **REG_info**. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must correct the site registration online to reflect the tank leak detection method(s). » *Additional Action(s):* The inspector should note the specific inaccuracy with the tank leak detection under Question **LD_tnov**, to include it in the list of registration discrepancies (in the NOV) that need to be corrected.

LD_tnov	***Which tank LD method(s) should be noted in the NOV?*** ***Note: two methods (maximum) should be selected to be on the registration.***
LD_prc	***Piping LD Methods: all LD methods that apply to the piping – including those required and any supplementary methods being performed – should be selected. Nothing should be selected if there is no piping associated with the tank.***
ALLD	» Automatic Line Leak Detector
LTT	» Line Tightness Testing
BTTF	» Bulk Piping Tightness Testing (FCTs)
N	» *613-4.3(a)(1):* The piping is not being monitored for leaks. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid piping leak detection method.
NLLD	» *613-4.3(b)(2)(i)(a)(1) / 4.3(b)(2)(i)(b) / 4.3(b)(2)(i)(c):* The pressurized piping is not equipped with the required automatic line leak detector. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid ALLD.
XP	» Leak detection is not required because the tank system is OOS and the (associated) tank is currently empty.
XT	» Piping leak detection is not required because there are no corresponding LD requirements.
LD_pri	***Is the registered piping LD method(s) accurate?***
Y	» No issues were found under this question.
IN	» *613-1.9(a)(4):* The registered piping leak detection method(s) is inaccurate. » *Note(s):* This Response does not include expired facility registrations, inaccurate facility information, unregistered tanks, or unregistered facilities; such violations should be captured under Question **REG_info.** » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must correct the site registration online to reflect the piping leak detection method(s). » *Additional Action(s):* The inspector should note the specific inaccuracy with the piping leak detection under Question **LD_pnov**, to include it in the list of registration discrepancies (in the NOV) that need to be corrected.
LD_pnov	***Which piping LD method(s) should be noted in the NOV?*** ***Note: two methods (maximum) should be selected to be on the registration.***

IMP	***Impermeable Barrier/Double-Bottom Monitoring***
IMP_note	***Impermeable barrier (or double-bottom) monitoring is a leak detection method that is covered under the 30-day walkthrough inspections for ASTs. Note any violations for this LD method in Walkthrough Inspections.***

Options

Internal Tank Inspections [INR]

Ten-year inspections – also known colloquially as out-of-service inspections or internal (tank) inspections – are integrity assessments of tank systems. Despite the name, internal inspections do cover both the interior and the exterior of the tank(s), as well as the exterior of any other accessible tank system equipment. Inspections must be performed in accordance with one of the following:

- API Standard 653 (April 2009) (for field-constructed tanks)
- STI SP001 (September 2011) (for shop-fabricated tanks)

INR records must be retained for (at least) twenty years and have the following information.

	Internal Tank Inspections [INR]

SP4 LD Records:
 	
Required Information
	• Tank ID number
	• Date/time of inspection
	• Tank (system) information:
	  ○ Installation date
	  ○ Dimensions (i.e., height, diameter if round)
	  ○ Design capacity/working capacity
	  ○ Manufacturer
	  ○ Applicable design/construction standards
	  ○ Any other information required under the inspection standard/code of practice followed
	• Inspection standard/code of practice followed
	• Inspection data:
	  ○ Components inspected; must include (at minimum):
	  ▪ Internal surfaces of the tank foundation, bottom, and shell
	  ▪ Piping connections
	  ▪ Difficult to reach areas that have not otherwise been scanned
	  ▪ Internal coatings (for any signs of failure)
	  ○ Measurements
	  ○ Photographs/drawings
	  ○ Calculations
	• Inspection summary:
	  ○ Issues identified
	  ○ Actions taken/recommended to address the identified issues
	  ○ Inspection results (i.e., is the tank/system suitable for continued use)
	  ○ Evaluation of sludge removal, transportation, and disposal (i.e., was it conducted in accordance with all applicable state/federal laws)
	• A statement from the internal inspector that the inspection was performed in accordance with an acceptable standard
	• Inspector's information:
	  ○ Qualifications/credentials
	  ○ Company name/address
	  ○ Name/signature
	• Any relevant notes regarding the inspection

Questions

INR_val	***Is this LD method valid for the tank system?*** ***Note: internal inspections every ten years are required for certain SP4 (or SP5), Cat. 1 ASTs. See 613-4.3(b)(1)(i)(a) for restrictions; and 613-4.3(b)(1)(i)(b) for exemptions.***
Y	» No issues were found under this question.
NV	» *613-4.3(b)(1):* Internal tank inspections are not a valid leak detection method for the tank (and there are no other valid leak detection methods in use). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid leak detection method.
IIS ***[SP4/SP5]***	» *613-4.3(c)(2):* The internal inspection was not performed in accordance with an appropriate code of practice. » *Note(s):* Shop-fabricated tanks should be inspected to STI SP001, while field-fabricated tanks should be inspected to API 653. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to perform (and submit the records of) an internal tank inspection within 90 days after the date of the NOV.
SM	» Internal inspection either is not required for the tank or supplements a different LD method that is being used to meet leak detection requirements.
INR_ld	***Is the LD method being performed periodically?***
Y	» No issues were found under this question.
NL ***[SP4/SP5]***	» *613-4.3(b)(1)(i)(a):* Internal tank inspections are not being performed. » *Note(s):* Inspection records are the primary evidence that internal tank inspections are being performed; if inspections are being performed, but records are not being retained for at least 20 years or until the inspection following the next inspection (whichever is later), Response **NR** under Question **INR_ldr** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to perform (and submit the records of) an internal tank inspection within 90 days after the date of the NOV.
PL ***[SP4/SP5]***	» *613-4.3(b)(1)(i)(a):* Internal tank inspections are not being performed at least every ten years. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to perform (and submit the records of) an internal tank inspection within 90 days after the date of the NOV.
INR_ldr	***Are the LD records being retained?*** ***Note: records must be retained for 20 years or until the inspection following the next inspection, whichever is later.***
Y	» No issues were found under this question.
NR ***[SP4/SP5]***	» *613-4.3(e)(1):* Internal tank inspection records are not being retained for at least 20 years or until the inspection following the next inspection (whichever is later). » *Note(s):* Inspection records are the primary evidence that internal tank inspections are being performed; if the records are missing, inspections are likely not being performed (and Response **NL** under Question **INR_ld** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records of the last inspection, or submit a plan to perform (and submit the records of) an internal tank inspection within 90 days after the date of the NOV.

INR_Idc	*Was the inspection complete/adequate?*
Y	» No issues were found under this question.
TI ***[SP4/SP5]***	» *613-4.3(c)(2):* Internal tank inspection records do not include the tank information. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the missing tank information, or submit a plan to perform (and submit the records of) an internal tank inspection within 60 days after the date of the NOV.
DT ***[SP4/SP5]***	» *613-4.3(c)(2):* Internal tank inspection records do not include the measurements taken during/calculations made as part of the inspection. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the missing measurements/calculations, or submit a plan to perform (and submit the records of) an internal tank inspection within 60 days after the date of the NOV.
IA ***[SP4/SP5]***	» *613-4.3(c)(2):* Internal tank inspection records do not include the issues identified with the tank (or any actions that should be taken to address the issues). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the missing issues/recommendations, or submit a plan to perform (and submit the records of) an internal tank inspection within 60 days after the date of the NOV.
R ***[SP4/SP5]***	» *613-4.3(c)(2):* Internal tank inspection records do not include the results of the inspection. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the missing inspection results, or submit a plan to perform (and submit the records of) an internal tank inspection within 60 days after the date of the NOV.
ST ***[SP4/SP5]***	» *613-4.3(c)(2):* Internal tank inspection records do not identify the inspection standard followed. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the missing inspection standard, or submit a plan to perform (and submit the records of) an internal tank inspection within 60 days after the date of the NOV.
II ***[SP4/SP5]***	» *613-4.3(c)(2):* Internal tank inspection records do not include the tank inspector credentials/information. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the missing inspector information, or submit a plan to perform (and submit the records of) an internal tank inspection within 60 days after the date of the NOV.

Tightness Testing (for tanks, piping, and FCT-associated piping) [TTT/LTT/BTTF]

Tightness testing refers to a spectrum of test methods designed to determine whether a specific component (i.e., tank, piping) has integrity.

Acceptable tank tightness testing methods generally fall under (one or more of) the following categories:

- *Volumetric test methods* involve applying (positive) pressure to the tank, and measuring any changes to liquid (i.e., petroleum) levels within the tank over time.
  - *Overfill test methods*, as the name implies, are performed for tanks that are overfilled.
  - *Underfill test methods* are performed for tanks that are only partly full.
- *Non-volumetric test methods* determine leaks using principles that generally do not involve measuring changes in liquid levels within the tank.
  - *Tracer test methods* involves adding a small amount of a tracer compound (e.g., helium or some other stable chemical marker) to the contents of the tank, then measuring tracer concentrations outside the primary containment.
  - *Ullage test methods* specifically examine the empty space above the stored liquid (i.e., the ullage)
  - *Vacuum test methods* involve applying (negative) pressure to the tank, then measuring any changes to the internal pressure over time.

Tightness testing is a poor form of leak detection. Leaks are not commonly detected in real time as the test is only conducted periodically by a technician[343], which means that leaks can continue to grow – and even become releases – in between tests. Failed tightness test results also do not always equate to leaking equipment, as non-wetted portions of the tank system component can also cause the failed results. Tightness testing is still a valid leak detection method for certain tanks and piping, but facilities are highly discouraged from using them.

The following illustrates the differences between tightness testing performed for conventional tanks/piping, and tightness testing performed piping associated with field-constructed tanks with a design capacity greater than 50,000 gallons.

<table>
<tr><td rowspan="3">SP4 Leak Detection:

Differences between Tightness Testing Methods</td><td colspan="2">Tank Tightness Testing [TTT]</td></tr>
<tr><td colspan="2">• Acceptable for: Cat. 1 tanks
• Perform and Record Results: Every ten years
○ Leak Rate: 0.1 gph</td></tr>
<tr><td>Line Tightness Testing [LTT]</td><td>Bulk Piping Tightness Testing (for FCT-associated piping) [BTTF]</td></tr>
<tr><td>• Acceptable for:
○ Cat. 1 piping
▪ Cat. 2/3 piping associated with FCTs > 50k gal.
• Perform and Record Results: Every ten years
○ Leak Rate: 0.1 gph (at 1.5 times the operating line pressure)</td><td>• Acceptable for: Cat. 1/2/3 piping associated with FCTs > 50k gal.
• Perform and Record Results: Semiannually / Annually
○ Leak Rate:
▪ Piping Segment Volume (PSV) < 50k gal.:
1.0 gph (for semiannual BTTF)
0.5 gph (for annual BTTF)
▪ 50k gal. ≤ PSV < 75k gal.:
1.5 gph (for semiannual BTTF)
0.75 gph (for annual BTTF)
▪ 75k gal. ≤ PSV < 100k gal.:
2.0 gph (for semiannual BTTF)
1.0 gph (for annual BTTF)
▪ PSV ≥ 100k gal.
3.0 gph (for semiannual BTTF)
1.5 gph (for annual BTTF)</td></tr>
</table>

[343] Technicians must be certified by the tightness testing equipment manufacturer/company.

The National Work Group on Leak Detection Evaluations (NWGLDE) website[344] has a list of acceptable line testing methods that meet the requirements above.

Tightness testing reports must be retained for (at least) ten years or until the next test, whichever is later. (Copies must be forwarded to the Regional DEC office within 30 days after the test is performed.) These reports must have the following information.

	Tank Tightness Testing [TTT], Line Tightness Testing [LTT], and Bulk Piping Tightness Testing (for FCT-associated piping) [BTTF]

SP4 LD Records:
 	
Required Information
	• Tank ID number
	• Type of petroleum stored
	• Date/time of testing
	• Tightness test method performed
	• Type of component test (e.g., tank, pressurized/suction piping, etc.)
	• Leak threshold (in gallons per hour)
	• Measured leak rate (in gallons per hour)
	• A statement from the technician that the test detects leaks for the component (at specified rates/operating pressures), as required
	• Technician's information:
	  ○ Testing credentials
	  ○ Testing company name/address
	  ○ Name/signature
	• Test results (i.e., pass/fail), including all applicable calculations that contributed to the results
	• Any relevant notes regarding the test, the component being tested, the tank system/facility, etc.

A leak is suspected when the tank system component fails the tightness test. Failed test results must be reported to the Spill Hotline within two hours after discovery.

Issues

- **Electronic Line Leak Detectors (ELLDs) Used for Line Tightness Testing**

  Some commercial ELLDs can be used in lieu of line tightness testing if capable of performing a test equivalent to a line tightness test. ELLDs connected to an appropriate tank console must be certified, programmed, and calibrated to test for 0.1-gph leaks at 1.5 times the normal operating pressure[345], annually. The records must also then specify the ELLD (and tank monitoring console) model used.

  Failed results of the (equivalent) 0.1-gph leak test must be reported to the Spill Hotline – as a suspected leak – within two hours after discovery, unless:

  - the ELLD is found to be defective and is repaired/replaced/recalibrated, AND additional monitoring does not confirm the initial results; or
  - the results were investigated and determined to be a non-spill event (e.g., caused by dispensing from the tank during testing).

- **Tightness Testing in Accordance with 6 NYCRR Section 613-4.3**

  Copies of any tightness test that must be performed in accordance with 6 NYCRR Section 613-4.3 – even if not required as a periodic leak detection method – must still be forwarded to the Regional DEC office within 30 days after the test.

[344] LD equipment manufacturers and testing companies have their products evaluated by a third-party testing company to certify – per the testing protocol created by EPA – that the equipment/test method detects certain leak rates; the manufacturer receives the results of the evaluation and then sends it to the National Work Group on Leak Detection Evaluations (NWGLDE) for inclusion in their website's list of certified equipment/test methods.

[345] The NWGLDE website has a list of ALLDs that meet this requirement.

Questions

TTT	***Tank Tightness Testing***
TTT_val	***Is this LD method valid for the tank system?***
Y	» No issues were found under this question.
NV	» *613-4.3(b)(1):* Tank tightness testing is not a valid leak detection method for the tank (and there are no other valid leak detection methods in use). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid leak detection method.
NW	» *613-4.3(c)(1)(i):* The tank tightness testing method cannot be shown to meet standards. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a tank tightness test within 30 calendar days after the date of the NOV.
SM	» Tank tightness testing either is not required for the tank or supplements a different LD method that is being used to meet leak detection requirements.
TTT_ld	***Is the LD method being performed periodically?***
Y	» No issues were found under this question.
NL ***[SP3/SP4/SP5]***	» *613-4.3(b)(1)(i)(a):* Tank tightness testing is not being performed for the tank. » *Note(s):* Test results are the primary evidence that tightness testing is being performed; if testing is being performed, but either a copy of the test results was not submitted to the DEC within 30 days after the test, or test results are not being retained for the required minimum duration, Response **NR** or **NS** under Question **TTT_ldr** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the results of) a tank tightness test, or install/utilize (and submit documentation of) a valid leak detection method.
PL ***[SP3/SP4/SP5]***	» *613-4.3(b)(1)(i)(a):* Tank tightness testing is not being performed for the tank at least every ten years. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the results of) a tank tightness test, or install/utilize (and submit documentation of) a valid leak detection method. » *Additional Action(s):* There is no need for the curative measure if the most recent annual tightness test was performed but a previous one was not; this violation, however, should still be cited.

TTT_ldr	***Are the LD records being retained?*** ***Note: records must be retained for 3 years or until the next test, whichever is later.***
Y	» No issues were found under this question.
NR ***[SP3/SP4/SP5]***	» *613-4.3(e)(2):* Tank tightness test results are not being retained (for the tank) for at least ten years or until the next test (whichever is later). » *Note(s):* Test results are the primary evidence that tightness testing is being performed; if test results cannot be produced AND copies were not submitted to the DEC within 30 days after the test, tightness testing is likely not being performed (and Response **NL** under Question **TTT_ld** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the results of the last test, or perform (and submit the results of) a tank tightness test.
NS ***[SP3/SP4/SP5]***	» *613-4.3(e)(3):* A copy of the tank tightness test results was not submitted to the DEC within 30 days after the test was performed. » *Note(s):* Test results are the primary evidence that tightness testing is being performed; if test results cannot be produced AND copies were not submitted to the DEC within 30 days after the test, tightness testing is likely not being performed (and Response **NL** under Question **TTT_ld** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the results of the last test, or perform (and submit the results of) a tank tightness test.
TTT_ldc	***Was the testing complete/adequate?***
Y	» No issues were found under this question.
IN ***[SP3/SP4/SP5]***	» *613-4.3(e)(2):* The tank tightness test results do not have all of the required information. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a tank tightness test and include all required information.
QT ***[SP3/SP4/SP5]***	» *613-4.3(c)(1)(ii):* The tank tightness test was not performed by a qualified technician. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a tank tightness test.

LTT	Line Tightness Testing
LTT_val	**Is this LD method valid for the tank system?** **Note: line tightness testing is a valid (piping) LD method only for certain piping Categories/pumping methods.**
Y	» No issues were found under this question.
NV	» *613-4.3(b)(2):* Line tightness testing is not a valid leak detection method for the piping (and there are no other valid leak detection methods in use). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid leak detection method.
NW	» *613-4.3(d)(2)(i):* The line tightness testing method cannot be shown to meet standards. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a line tightness test within 30 calendar days after the date of the NOV.
SM	» Line tightness testing either is not required for the piping or supplements a different LD method that is being used to meet leak detection requirements.
LTT_ld	**Is the LD method being performed periodically?**
Y	» No issues were found under this question.
NLPP	» *613-4.3(b)(2)(i)(a)(1):* Line tightness testing is not being performed for the pressurized piping. » *Note(s):* Test results are the primary evidence that tightness testing is being performed; if testing is being performed, but either a copy of the test results was not submitted to the DEC within 30 days after the test, or test results are not being retained for the required minimum duration, Response **NR** or **NS** under Question **LTT_ldr** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the results of) a line tightness test, or install/utilize (and submit documentation of) a valid leak detection method.
PLPP	» *613-4.3(b)(2)(i)(a)(1):* Line tightness testing is not being performed for the pressurized piping at least every ten years. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the results of) a line tightness test, or install/utilize (and submit documentation of) a valid leak detection method. » *Additional Action(s):* There is no need for the curative measure if the most recent annual tightness test was performed but a previous one was not; this violation, however, should still be cited.
NLSP	» *613-4.3(b)(2)(ii)(a)(1):* Line tightness testing is not being performed for (non-exempt) suction piping. » *Note(s):* Test results are the primary evidence that tightness testing is being performed; if testing is being performed, but either a copy of the test results was not submitted to the DEC within 30 days after the test, or test results are not being retained for the required minimum duration, Response **NR** or **NS** under Question **LTT_ldr** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the results of) a line tightness test, or install/utilize (and submit documentation of) a valid leak detection method.
PLSP	» *613-4.3(b)(2)(ii)(a)(1):* Line tightness testing is not being performed for (non-exempt) suction piping at least every ten years. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the results of) a line tightness test, or install/utilize (and submit documentation of) a valid leak detection method. » *Additional Action(s):* There is no need for the curative measure if the most recent annual/triennial tightness test was performed but a previous one was not; this violation, however, should still be cited.

LTT_ldr	***Are the LD records being retained?*** ***Note: records must be retained for ten years or until the next test (whichever is later) for piping that is part of a SP4 (or SP5) AST system.***
Y	» No issues were found under this question.
NR	» *613-4.3(e)(2):* Line tightness test results are not being retained for at least ten years or until the next test (whichever is later). » *Note(s):* Test results are the primary evidence that tightness testing is being performed; if test results cannot be produced AND copies were not submitted to the DEC within 30 days after the test, tightness testing is likely not being performed (and Response **NLPP**/**NLSP** under Question **LTT_ld** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the results of the last test, or perform (and submit the results of) a line tightness test.
NS	» *613-4.3(e)(3):* A copy of the line tightness test results was not submitted to the DEC within 30 days after the test was performed. » *Note(s):* Test results are the primary evidence that tightness testing is being performed; if test results cannot be produced AND copies were not submitted to the DEC within 30 days after the test, tightness testing is likely not being performed (and Response **NLPP**/**NLSP** under Question **LTT_ld** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the results of the last test, or perform (and submit the results of) a line tightness test.
LTT_ldc	***Was the testing complete/adequate?***
Y	» No issues were found under this question.
IN	» *613-4.3(e)(2):* The line tightness test results do not have all of the required information. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a line tightness test and include all required information.
QT	» *613-4.3(d)(2)(ii):* The line tightness test was not performed by a qualified technician. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a line tightness test.

BTTF	Bulk Piping Tightness Testing (FCTs)
BTTF_val	***Is this LD method valid for the tank system?*** ***Note: bulk piping tightness testing is a valid (primary) LD method only for SP2/SP4 (or SP5) piping associated with field-constructed tanks with a design capacity greater than 50,000 gallons.***
Y	» No issues were found under this question.
NV	» *613-4.3(b)(2):* Bulk piping tightness testing is not a valid leak detection method for the piping (and there are no other valid leak detection methods in use). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid leak detection method.
NW [SP2/SP4/SP5]	» *613-4.3(d)(3)(ii) / 4.3(d)(3)(iii):* The bulk piping tightness testing method cannot be shown to meet standards. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a bulk piping tightness test within 30 calendar days after the date of the NOV.
SM	» Bulk piping tightness testing either is not required for the piping or supplements a different LD method that is being used to meet leak detection requirements.
BTTF_ld	***Is the LD method being performed periodically?***
Y	» No issues were found under this question.
NL [SP2/SP4/SP5]	» *613-4.3(b)(2)(iii) / 4.3(d)(3)(i):* Bulk piping tightness testing is not being performed for the piping. » *Note(s):* Test results are the primary evidence that tightness testing is being performed; if testing is being performed, but either a copy of the test results was not submitted to the DEC within 30 days after the test, or test results are not being retained for the required minimum duration, Response **NR** or **NS** under Question **BTTF_ldr** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the results of) a bulk piping tightness test, or install/utilize (and submit documentation of) a valid leak detection method.
PL [SP2/SP4/SP5]	» *613-4.3(b)(2)(iii) / 4.3(d)(3)(i):* Bulk piping tightness testing is not being performed for the piping at least semiannually/annually. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the results of) a bulk piping tightness test, or install/utilize (and submit documentation of) a valid leak detection method. » *Additional Action(s):* There is no need for the curative measure if the most recent annual tightness test was performed but a previous one was not; this violation, however, should still be cited.

BTTF_ldr	***Are the LD records being retained?*** ***Note: records must be retained for ten years or until the next test, whichever is later.***
Y	» No issues were found under this question.
NR ***[SP2/SP4/SP5]***	» *613-4.3(e)(2):* Bulk piping tightness test results are not being retained for at least ten years or until the next test (whichever is later). » *Note(s):* Test results are the primary evidence that tightness testing is being performed; if test results cannot be produced AND copies were not submitted to the DEC within 30 days after the test, tightness testing is likely not being performed (and Response **NL** under Question **BTTF_ld** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the results of the last test, or perform (and submit the results of) a bulk piping tightness test.
NS ***[SP2/SP4/SP5]***	» *613-4.3(e)(3):* A copy of the bulk piping tightness test results was not submitted to the DEC within 30 days after the test was performed. » *Note(s):* Test results are the primary evidence that tightness testing is being performed; if test results cannot be produced AND copies were not submitted to the DEC within 30 days after the test, tightness testing is likely not being performed (and Response **NL** under Question **BTTF_ld** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the results of the last test, or perform (and submit the results of) a bulk piping tightness test.
BTTF_ldc	***Was the testing complete/adequate?***
Y	» No issues were found under this question.
IN ***[SP2/SP4/SP5]***	» *613-4.3(e)(2):* The bulk piping tightness test results do not have all of the required information. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a bulk piping tightness test and include all required information.
QT ***[SP2/SP4/SP5]***	» *613-4.3(d)(2)(ii) / 4.3(d)(3)(i):* The bulk piping tightness test was not performed by a qualified technician. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a bulk piping tightness test.

Automatic Line Leak Detector [ALLD]

Automatic line leak detectors (ALLDs) are in-line devices that monitor for leaks based on losses in piping pressure. There are two types of ALLDs:

- Electronic line leak detectors (ELLDs) use sensors connected to a tank monitoring console that monitors the pressure downstream of the valve when the submersible turbine pump (STP) is on; a leak in the piping translates to a lower line pressure, which then causes the ELLD to stop flow through the piping.
- Mechanical line leak detectors (MLLDs) are pressure-actuated valves designed to only allow petroleum to flow if the line pressure downstream of the valve builds up when the STP is on; a leak in the piping prevents this build-up in pressure, which causes the MLLD to restrict – not stop – flow through the piping.

Both types of ALLDs are often screwed onto the top of the STP but can be differentiated by the presence of copper tubing on MLLDs (as opposed to electrical wiring – if any – on ELLDs). ELLDs also cause audible and/or visual alarms (often on the tank console) when tripped, whereas MLLDs do not. Either type of ALLD should not be separate from the STP as ALLDs can only detect leaks downstream from it – any measurable piping segment between the STP and the ALLD would not have leak detection.

ALLDs must be able to detect 3-gph leaks at a line pressure of 10 psi within one hour. The National Work Group on Leak Detection Evaluations (NWGLDE) website has a list of ALLDs that meet this requirement.

Failed ALLDs must be replaced (as repairing it is nearly impossible), but a tripped ALLD signifies a suspected leak. Activated ALLDs must be reported to the Spill Hotline within two hours after discovery, unless:

- the ALLD is found to be defective and is immediately repaired/replaced/recalibrated, AND additional monitoring does not confirm the initial results; or
- the results were investigated and determined to be a non-spill event (e.g., from a power surge).

Facilities are advised to keep a running history of all activations of the ALLD, which includes the date/time of activation, what caused it, and what was done to address it.

ALLDs are also subject to walkthrough inspections[330].

Issues

- **Weather Changes Affecting MLLDs**

  MLLDs can be tripped when the temperature of the petroleum (in the piping) drops with the weather. Low temperatures cause petroleum to contract, causing a drop in the line pressure, which in turn trips the MLLD. Such cases must be treated as suspected leaks unless the facility can definitively prove that the MLLD was tripped solely due to weather conditions.

- **Tampering with ALLDs**

  ALLDs are sometimes tampered with. Inspectors should look at the ALLD itself for evidence of tampering or other factors which might interfere with its ability to actuate. (The parts of the ALLD that stop the flow of petroleum could have been taken out, for example, leaving the shell screwed onto the STP to give the appearance of having a functional ALLD.) Inspectors are advised review the functionality test if there is reason to doubt its ability to detect leaks. They can also ask the operator to operate the tank monitoring console and show that the ELLD is not in alarm.

- **ALLDs on Siphoned/Manifolded Tanks**

  Specific tank configurations warrant the right number, type, and placement of ALLDs to properly perform leak detection of the piping connecting these tanks.

  Siphoned tanks in series must have one ALLD at the STP of the master/primary tank; the siphon bar connecting the tanks is considered to be safe suction piping that does not require leak detection.

  Siphoned tanks in parallel and manifolded tanks must have only one ALLD – an ELLD – placed as far upstream as possible to detect leaks from all piping both upstream and downstream of the manifold, provided that there are no valves (e.g., check valves, solenoid valves) that isolate any portion of the manifolded piping. This ELLD must also be capable of shutting down the STPs if a leak is detected. Such configurations must not have two ALLDs (at the STPs of both tanks) because doing so prevents either ALLD from detecting 3-gph leaks (i.e., the smallest leak that either ALLD can detect are 6-gph leaks).

  Inspectors are advised to check the type and locations of all ALLDs particularly for these tank configurations.

- **ALLD Placement Relative to the Solenoid/Anti-Siphon Valve**

  Solenoid/anti-siphon valves and ALLDs may be fitted to the same piping, but ALLDs will only work when downstream of the solenoid/anti-siphon valve. This means that the ALLD must be separate from the STP (i.e., fitted onto the piping separately) such that petroleum goes through the STP first, then the solenoid/anti-siphon valve, then the ALLD.

- **ALLDs on Tanks with Multiple Pressurized Lines**

  Some tanks are fitted with multiple STPs/pressurized lines (that are not manifolded anywhere downstream of the tank); each line must have its own ALLD.

Questions

ALLD_val	***Is this LD method valid for the tank system?*** ***Note: ALLDs are valid only for pressurized piping that is part of certain tank systems.***
Y	» No issues were found under this question.
NV	» *613-4.3(b)(2):* Automatic line leak detector is not a valid leak detection method for the piping (and there are no other valid leak detection methods in use). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid leak detection method.
NW	» *613-4.3(d)(1):* The automatic line leak detector cannot be shown to meet standards. » *Note(s):* This Response also includes any automatic line leak detector that is not designed for the petroleum stored in the tank system. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a line tightness test within 30 calendar days after the date of the NOV.

ALLD_gwo	Is the equipment in good working order?
Y	» No issues were found under this question.
AI	» *613-4.3(a)(1)(i):* The automatic line leak detector is positioned such that it would not detect a leak (from the downstream piping) if one were to occur. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either install an additional automatic line leak detector(s) or reinstall the existing ALLD such that entire piping system is monitored for leaks by the ALLD(s), and submit documentation that the ALLD(s) is properly installed relative to the piping configuration.
AO	» *613-1.12 / 4.3(a)(1)(i) – (ii):* The automatic line leak detector is inoperable. » *Note(s):* The automatic line leak detector is considered inoperable if any of the following is true: - the ALLD is malfunctioning; - the ALLD is shown to be damaged or unpowered; - the console and the ELLD do not have a connection; - the ALLD is not able to detect 3-gph leaks at 10 psi; or - the ALLD is placed incorrectly along the piping such that the ALLD cannot detect leaks from all portions of the piping. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must repair or replace (and submit repair/replacement documentation for) the automatic line leak detector.
NX	» *613-1.4(b):* The automatic line leak detector could not be accessed for inspection. » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must submit documentation that the automatic line leak detector is present and in good working order/properly installed.

Secondary Containment

Purpose

Secondary containment acts as the last line of defense in the event of a spill from any portion of the tank system that routinely contains petroleum. This is particularly important with regards to tank system components (i.e., tank, piping/ancillary equipment) in contact with the ground and dispensers, as portions of these equipment may not be readily visible to an operator, and petroleum may leak – and reach the lands and/or waters of the State (i.e., become a release) – through these nonvisible areas.

Requirements

Secondary containment refers to equipment/structure external to the primary containment[346], with the express purpose of containing spills and preventing releases before the operator is made aware of and addresses the spill and any possible equipment failure. Facilities must meet the following overall secondary containment requirements[347] (as applicable).

SP4 Secondary Containment	***Requirements***
General	• Alternatives to SC must be able to (reasonably) prevent releases. • Conventional SC equipment must be: ○ installed in accordance with the manufacturer's instructions (and/or an acceptable code of practice[348]); ○ constructed in accordance with either: ▪ NFPA 30 (1984), section 2-2.3; or ▪ NFPA 30 (2012), section 22.11; ○ sized to have a minimum volume equivalent to the greater of either: ▪ 110% of the capacity of the largest tank (or interconnected tanks) within the containment area; or ▪ 100% of the capacity of the largest single tank within the containment area, plus sufficient room for freeboard to contain precipitation from a 25-year storm event; ○ able to contain leaks from the primary containment (until detected and remediated); and ○ prevent releases. • Impermeable barriers must: ○ be installed in accordance with the manufacturer's instructions (and/or an acceptable code of practice[348]); ○ have a permeability rate to water ≤ $1x10^{-6}$ cm/s; ○ not deteriorate in an underground environment, in the presence of petroleum, or due to the structural stresses of the tank; and ○ be capable of being monitored for leaks between the barrier and the tank bottom. • Double-bottom tanks must be: ○ installed in accordance with the manufacturer's instructions (and/or an acceptable code of practice[348]); and ○ capable of being monitored for leaks between the barrier and the tank bottom.
Periodic Equipment Inspections	Conventional SC, alternatives to SC, and impermeable barriers/double-bottoms are subject to walkthrough inspections[349] performed every 30 days.
Recordkeeping	*Retain Walkthrough Inspection Records:* For three years

[346] 6 NYCRR subdivision 613-1.3(bd): *Primary containment* means any tank, piping, or ancillary equipment which, under normal operating conditions, routinely contains petroleum. This generally excludes fill pipes and vent pipes, among others. Secondary containment requirements also exclude any aboveground piping (not in contact with the ground) from which a leak is readily visible.
[347] Secondary containment requirements for SP4 tank systems are found in 6 NYCRR paragraph 613-4.1(b)(1).
[348] See **Installation** on p. 294.
[349] See **Walkthrough Inspections** on p. 301.

Tank Secondary Containment

Tanks must utilize one of the following types of secondary containment[350].

	Alternatives to Secondary Containment	***Conventional Secondary Containment***
Secondary Containment: SP4 Tanks		*Required for:* Cat. 1/2/3 tanks with a design capacity ≥ 10,000 gal.
	Acceptable for: Cat. 1/2/3 tanks with a design capacity < 10,000 gal. AND within 500' of any of the following sensitive receptors: • perennial or intermittent streams • public or private wells • primary or principal aquifers[351] • wetlands[352] • lakes/ponds, estuaries, or other similar surface water bodies • storm drains	

Cat. 2/3 tanks that are not entirely aboveground (i.e., not on racks, cradles, or stilts) – regardless of design capacity or proximity to sensitive receptors – must also either be underlain by an impermeable barrier or have double-bottom construction.

[350] Specific SC standards/requirements for SP4 tanks are found in 6 NYCRR clauses 613-4.1(b)(1)(i)(*a*), (ii)(*c*), & (iii)(*c*).
[351] These aquifers are defined in USGS Water Resource Investigation Reports 87-4274, 87-4275, 87-4276, 97-4122, 88-4076, and Appendix C.
[352] Wetlands are defined in 6 NYCRR Part 664.

Questions

SC_trc	***Tank SC Equipment: all SC equipment that apply to the tank – including those required and any supplementary equipment installed – should be selected.***
SL	» Synthetic Liner
EL	» Excavation Liner
IA	» Remote Impounding Area
DK	» Diking
VA	» (Accessible) Vault
TDWA	» Traditional Double-Walled (AST) Construction
MDWA	» Modified Double-Walled (AST) Construction
IU	» Impervious Underlayment
DB	» Double Bottom
O	» Other
NA ***[SP4/SP5]***	» *613-4.1(b)(1)(i)(a)(2) / 4.1(b)(1)(ii)(c)(2) / 4.1(b)(1)(iii)(c)(2):* The tank is not equipped with the required (conventional) secondary containment, or alternatives are used in lieu of conventional secondary containment. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install secondary containment within 90 calendar days after the date of the NOV.
NAA ***[SP4/SP5]***	» *613-4.1(b)(1)(i)(a)(1) / 4.1(b)(1)(ii)(c)(1) / 4.1(b)(1)(iii)(c)(1):* The tank is not equipped with either (conventional) secondary containment or alternatives to secondary containment. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install either secondary containment or alternatives to secondary containment, within 90 calendar days after the date of the NOV.
NI ***[SP4/SP5]***	» *613-4.1(b)(1)(ii)(c)(3) / 4.1(b)(1)(iii)(c)(3):* The tank is neither underlain by an impermeable barrier or constructed with a double-bottom. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to either lift the tank on racks/cradles/stilts or install an impermeable barrier within 180 days after the date of the NOV.
ND ***[SP4/SP5]***	» *613-4.2(l):* There is no manually controlled valve on the discharge pipe of the AST secondary containment. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must install a dike drain valve on the discharge pipe and submit a photograph showing the (locked/closed) valve. » *Additional Action(s):* The absence of a drain valve on the discharge pipe likely indicates that the dike does not have integrity; the inspector is advised to investigate the area around the discharge pipe for signs of a release.
XTA ***[SP4/SP5]***	» Tank secondary containment is not required because the AST has a capacity less than 10,000 gallons but is not within 500’ of a sensitive receptor.
XPI ***[SP4/SP5]***	» An impermeable barrier/double-bottom is not required because the AST is either a Cat. 1 tank or entirely aboveground (i.e., on racks/cradles/stilts).
XPD ***[SP4/SP5]***	» A dike drain valve is not required because there is no discharge pipe on the AST dike.

SC_tri	Is the registered tank SC equipment accurate?
Y	» No issues were found under this question.
IN	» *613-1.9(a)(4):* The registered tank secondary containment is inaccurate. » *Note(s):* This Response does not include expired facility registrations, inaccurate facility information, unregistered tanks, or unregistered facilities; such violations should be captured under Question **REG_info**. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must correct the site registration online to reflect the tank secondary containment. » *Additional Action(s):* The inspector should note the specific inaccuracy with the tank secondary containment under Question **SC_tnov**, to include it in the list of registration discrepancies (in the NOV) that need to be corrected.
SC_tnov	**Which tank SC equipment should be noted in the NOV?**
SC_gwo	**Is the equipment in good working order?**
Y	» No issues were found under this question.
LIA **[SP4/SP5]**	» *613-1.12 / 4.1(b)(1)(i)(a)(1) / 4.1(b)(1)(i)(a)(2)(i) – (ii) / 4.1(b)(1)(ii)(c)(1) / 4.1(b)(1)(ii)(c)(2)(i) – (ii) / 4.1(b)(1)(iii)(c)(1) / 4.1(b)(1)(iii)(c)(2)(i) – (ii):* The (conventional) tank secondary containment lacks integrity/is not liquid-tight. » *Note(s):* Evidence of integrity issues includes: - visible cracking; - degradation/erosion; - absence of water after a recent rain event; and - corrosion (for metal forms of secondary containment). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either repair or replace (and submit repair/replacement documentation for) the secondary containment.
WDA **[SP4/SP5]**	» *613-1.12 / 4.1(b)(1)(i)(a)(1) / 4.1(b)(1)(i)(a)(2)(i) – (ii) / 4.1(b)(1)(ii)(c)(1) / 4.1(b)(1)(ii)(c)(2)(i) – (ii) / 4.1(b)(1)(iii)(c)(1) / 4.1(b)(1)(iii)(c)(2)(i) – (ii):* The (conventional) tank secondary containment area contains water and/or debris. » *Note(s):* Note that this violation excludes clay liners that require periodic hydration, as long as the water does not significantly reduce containment volume and does not damage (metallic portions) the secondary containment. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must clean the secondary containment area to be free of all liquids and debris, and submit a photograph showing the cleaned containment area.
IDA **[SP4/SP5]**	» *613-4.1(b)(1)(i)(a)(1) / 4.1(b)(1)(i)(a)(2) / 4.1(b)(1)(ii)(c)(1) / 4.1(b)(1)(ii)(c)(2) / 4.1(b)(1)(iii)(c)(1) / 4.1(b)(1)(iii)(c)(2):* The (conventional) tank secondary containment is not adequately designed. » *Note(s):* Design issues include: - inability to contain all possible spills from the tank system; - insufficient containment volume/capacity; - incompatibility with the type of petroleum stored; - permeability; - excessive vegetation; and - wrong drain valve/control location. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit a plan to repair/reconfigure the secondary containment to meet design requirements within 60 calendar days after the date of the NOV, or install adequately designed secondary containment within 90 calendar days after the date of the NOV.

APR ***[SP4/SP5]***	» *613-4.1(b)(1)(i)(a)(1) / 4.1(b)(1)(ii)(c)(1) / 4.1(b)(1)(iii)(c)(1):* The alternatives to secondary containment do not address all possible (sources of) spills from the tank system. » *Note(s):* Possible types/sources of leaks include: - spills at the fill port from the delivery hose; - overfills from fill ports/vents; - leaks from valves, pumps, and other connections to the tank; - flow from valves left open by either accident or vandalism; - vandalism with ballistics; - vehicular traffic that could contact/rupture the tank; - fires that could weaken/rupture/overflow the tank; and - flooding/flotation. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either: submit a plan to repair/reconfigure the secondary containment to meet design requirements (or the alternatives to address all possible spills from the tank system) within 60 calendar days after the date of the NOV; or install adequately designed secondary containment (or alternatives to secondary containment) within 90 calendar days after the date of the NOV.
AMA ***[SP4/SP5]***	» *613-1.12 / 4.1(b)(1)(i)(a)(1) / 4.1(b)(1)(ii)(c)(1) / 4.1(b)(1)(iii)(c)(1):* The alternatives to secondary containment are inoperable. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either repair or replace (and submit repair/replacement documentation for) the alternatives to secondary containment.
LDO ***[SP4/SP5]***	» *613-4.1(b)(1)(ii)(c)(3)(i)(C) / 4.1(b)(1)(iii)(c)(3)(i)(C):* The bottom of the on-ground tank cannot be monitored for leaks. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either repair (and submit repair documentation for) the impermeable barrier to allow for leak monitoring, or submit a plan to either lift the tank on racks/cradles/stilts or install an impermeable barrier within 180 days after the date of the NOV.
DL ***[SP4/SP5]***	» *613-4.2(l):* The drain valve is not locked in a closed position. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must lock the dike drain valve in a closed position and submit a photograph showing the locked/closed valve.
LIP	» *613-1.12:* The piping secondary containment – excluding any sumps – lacks integrity/is not liquid-tight. » *Note(s):* Evidence of integrity issues (for double-walled tank system components) includes: - presence of water (in the interstice); and - failed weekly interstitial monitoring results. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to either repair or replace the compromised piping (with double-walled piping) within 60 days after the date of the NOV.
LIC	» *613-1.12:* The (non-UDC) containment sump lacks integrity or is not liquid-tight on its sides, bottom, and/or penetrations. » *Note(s):* Evidence of integrity issues includes visible cracking and degradation. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to either repair or replace (and submit repair/replacement documentation for) the containment sump within 60 days after the date of the NOV.
WDC	» *613-1.12:* The (non-UDC) containment sump contains water and/or debris. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must clean the containment sump to be free of all liquids and debris, and submit a photograph showing the cleaned sump. » *Additional Action(s):* The presence of water within the sump is an unusual operating condition (i.e., a suspected spill) which the facility must investigate to determine how water is entering the sump and if it is escaping after being exposed to the potentially contaminated insides of the sump.

LID	» *613-1.12:* The under-dispenser containment lacks integrity or is not liquid-tight on its sides, bottom, and/or penetrations. » *Note(s):* Evidence of integrity issues includes visible cracking and degradation. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to either repair or replace (and submit repair/replacement documentation for) the UDC within 60 days after the date of the NOV.
WDD	» *613-1.12:* The under-dispenser containment contains water and/or debris. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must clean the UDC to be free of all liquids and debris, and submit a photograph showing the cleaned UDC. » *Additional Action(s):* The presence of water within the UDC is an unusual operating condition (i.e., a suspected spill) which the facility must investigate to determine how water is entering the UDC and if it is escaping after being exposed to the potentially contaminated insides of the UDC.

Options

Alternatives to Secondary Containment

Alternatives to secondary containment generally refer to tank system equipment that prevents releases but likely does not contain spills, as they are often not containment structures themselves. These technologies are either activated automatically or used manually (by the operator), and are equipped for tank systems specifically to address – among others – the following types/possible sources of leaks (as applicable):

- Spills at the fill port from the delivery hose
- Overfills from:
  - fill ports
  - vents/emergency vents
- Leaks from:
  - valves
  - pumps
  - other connections to the tank
- Flow from valves left open by either accident or vandalism
- Vandalism with ballistics
- Vehicular traffic that could contact/rupture the tank
- Fires that could weaken/rupture/overflow the tank
- Flooding/flotation

Alternatives to secondary containment are also known as active containment measures and can be utilized in lieu of – though commonly used with – conventional forms of secondary containment (i.e., passive containment measures) for tanks with a design capacity less than 10,000 gallons and within 500 feet of a sensitive receptor.

Inspectors should check that the alternatives being used are functional and in good working condition (i.e., not corroded/degraded).

Alternatives to secondary containment are also subject to walkthrough inspections[349].

Issues

- **Traditional Double-Walled Tanks as Alternatives to Secondary Containment**

  For tanks with a design capacity greater than or equal to 10,000 gallons, traditional double-walled construction does not count as a standalone form of tank secondary containment because it does not address spills/overfills/leaks from (connections at) the top of the tank.

  However, for tanks with a design capacity less than 10,000 gallons and within 500 feet of a sensitive receptor, traditional double-walled construction may be used in conjunction with alternatives to secondary containment to meet tank SC requirements.

- **Overfill Prevention Devices as Alternatives to Secondary Containment**

  Overfill prevention devices must often provide a positive shutdown – such that overfills are not reasonably expected to occur, especially when the facility loses electricity – to be considered an acceptable alternative to secondary containment. Automatic shutoff valves (designed for ASTs and pressurized deliveries) are acceptable alternatives, but level gauges and high-level alarms are not.

Conventional Secondary Containment

There are no prescribed options for secondary containment to account for the multitude of AST designs/setups; however, conventional secondary containment designs include one or more of the following equipment:

- Dikes
- Under-tank liners
- Pads
- Ponds
- Impoundments (remote or otherwise)
- Curbs
- Ditches
- Sumps
- Emergency/overflow containment tanks/chambers (i.e., modified double-walled tanks)
- Other equipment capable of containing the petroleum stored (e.g., accessible vaults, double-wall construction, double-bottom construction)

The equipment above are known as passive containment measures. Designs consisting of this equipment type are generally acceptable, as long as the design addresses the following issues (as applicable):

	Leaks/Possible Sources of Leaks	***Design***	***Operation/Maintenance***

SP4 Secondary Containment Issues	• Spills at the fill port from the delivery hose
	• Overfills from:
	  ○ fill ports
	  ○ vents
	• Leaks from:
	  ○ valves
	  ○ pumps
	  ○ other connections to the tank
	• Flow from valves left open by either accident or vandalism
	• Vandalism with ballistics
	• Vehicular traffic that could contact/rupture the tank
	• Fires that could weaken/rupture/overflow the tank
	• Flooding/flotation
		• Containment volume/capacity[353] that accounts for:
		  ○ volumes of the tanks (especially the largest tank or interconnected tanks) within the containment area
		  ○ local precipitation conditions
		• Compatibility with the stored petroleum
		• Permeability
		• Integrity
		• Excessive vegetation that:
		  ○ prevents visual inspection of containment integrity
		  ○ affects containment integrity
		• Drain valve/control location
			• Condition of designed penetrations/connections (e.g., piping chase, liner connections to foundations, etc.)
			• Corrosion
			• Degradation/erosion
			• Material-specific modes of failure (e.g., clay liner desiccation, coating failure, concrete spalling, etc.)
			• Differential settlement
			• Drain valve/control operability[354]
			• Discharge frequency
			• Discoloration/staining due to past leaks
			• Presence of the following inside the containment area:
			  ○ leaks
			  ○ standing water
			  ○ debris
			  ○ vegetation
			  ○ other equipment

Inspectors are advised to look at these issues, particularly for designs that are visually accessible.

Conventional forms of secondary containment can be combined with alternatives to secondary containment for tanks with a design capacity of less than 10,000 gallons and within 500 feet of a sensitive receptor; however, tanks with design capacities greater than or equal to 10,000 gallons must have secondary containment and alternatives cannot be used in their place. Both conventional and alternatives to secondary containment are also subject to walkthrough inspections[349].

[353] DER-17: The containment area must have a minimum volume equal to the greater of either: 110% of the capacity of the largest tank (or interconnected tanks) within the containment area; or 100% of the capacity of the largest single tank within the containment area, plus sufficient room for freeboard to contain precipitation from a 25-year storm event.
[354] 6 NYCRR subdivision 613-4.2(l): if gravity drainpipes are used, all dike valves must be locked in a closed position except when the operator is in the process of draining clean water from the diked area.

Issues

- **Modified Double-Walled Tanks**

  Traditional double-walled construction is not acceptable as a standalone form of tank secondary containment because they lack the ability to provide adequate containment and do not address spills/overfills/leaks from (connections at) the top of the tank.

  Manufacturers in turn developed the modified double-walled tank to meet tank SC requirements: they feature either an oversized interstitial space or a separate overflow chamber (adjacent to the primary tank), both of which have a capacity approximately 20% of the primary tank's design capacity. The person responsible for transfer activities are notified almost immediately when the primary tank is overfilled, prohibiting petroleum from exiting through the emergency vent and becoming a release.

- **Spill Drainage for Dikes and Remote Impounding**

  Secondary containment must be designed such that petroleum spills drain away from the tank. For dikes/remote impounding areas, this is achieved by shaping the floor to have a slope of at least 1% for 50 ft/15 m or more (or towards the dike base if the distance between the dike wall and the tank is less than 50 ft/15 m).[355]

- **Rain Shields Over Secondary Containment**

  Rain shields are often fitted to dikes when the walls are close (enough) to the tank, to prevent precipitation from entering the dike. Doing so also prevents spills – from the top of the tank – from entering the diked area, thereby defeating the purpose of secondary containment.

- **Floor Drains in Vaults**

  ASTs in indoor areas or (accessible) tank vaults can meet tank SC requirements, unless the area/vault has floor drains/doors that would defeat the purpose of secondary containment.

- **Stormwater Management**

  Stormwater that collects within the secondary containment system must be discharged using either a manually operated pump/siphon, or a gravity drainpipe with a manually controlled valve on the outside of the dike. The dike drain valves must be locked in the closed position to prevent inadvertent discharging of any spills/liquids inside the containment area. They may only be opened to drain stormwater from the containment area but must be closed and locked otherwise.

- **Containment Volume/Capacity Calculations**

  The capacity of any secondary containment design must be calculated properly. Inspectors that cannot confirm these volumes through the inspection should ask facilities to provide installation records or other documentation that justifies the containment design volume.

- **Regularly Hydrated Clay Liners**

  Clay liners being used for secondary containment may have water in the containment area, as long as the water does not significantly reduce the containment volume and does not damage (metallic portions of) the secondary containment. However, tanks in contact with such clay materials (i.e., not on racks/cradles/stilts) must be protected from corrosion.

[355] This is required in NFPA 30 (1984), sections 2-2.3.2(a) and 3(a), and NFPA 30 (2012), sections 22.11.1.1 and 2.1.

- **Material Compatibility Issues**

  Geomembrane liners, concrete, and steel are all presumed to be compatible with petroleum. Most geosynthetic clay liners, however, are not compatible with ethanol blends unless the liner has been specifically modified/prepared for storing petroleum blends with alcohol. Asphalt is also not compatible with motor fuels (i.e., gasoline blends) unless treated with a hydrocarbon-resistant substance/material.

- **Recommended Permeability Rates**

  Secondary containment structures must have the following permeability rates (to water), depending on the petroleum type:

  - Gasoline: 1×10^{-7} cm/sec
  - #2 fuel oil (and diesel): 1×10^{-6} cm/sec
  - #4 fuel oil: 3×10^{-6} cm/sec
  - #6 fuel oil: 1×10^{-5} cm/sec

  Containment areas with multiple tanks must have the recommended permeability rate for the lightest (i.e., least viscous) form of petroleum stored within the containment area.

  Note that these suggested rates apply to all areas of the secondary containment – commonly the walls and floor – that will come into contact with the stored petroleum if a spill occurs. The area, however, beneath any tank not entirely aboveground (on racks/cradles/stilts), must always have a maximum permeability rate (to water) of 1×10^{-6} cm/sec.[356]

- **Soil Used as Part of Secondary Containment**

  Soil may be used as part of the secondary containment design only when it allows for easy recovery of any spill into the secondary containment. However, tanks in contact with such soil (i.e., not on racks/cradles/stilts) must be protected from corrosion.

- **Plastic Used as Part of Secondary Containment**

  Plastic tubs are not acceptable for secondary containment, particularly as dikes, because plastic is not fireproof and may not be able to withstand a full hydrostatic head.[357]

- **Discharge Frequency vs. Stormwater Accumulation**

  The non-accumulation of stormwater inside open forms of secondary containment (e.g., dikes) may suggest an integrity (or permeability) issue if local geographical and precipitation conditions are not commensurate with discharge frequency. However, the presence of stormwater should not be taken as formal evidence of proper performance/permeability of the containment area.

[356] See **Impermeable Barriers and Double-Bottoms** on p. 333.
[357] NFPA 30 (1984), section 2-2.3.3(d)/NFPA 30 (2012), section 22.11.2.4: Walls of the diked area shall be of earth, steel, concrete, or solid masonry design to be liquid-tight and to withstand a full hydrostatic head.

Impermeable Barriers and Double-Bottoms

Aboveground tanks are susceptible to leaks/releases from the underside of the tank, which may seep into the lands and/or waters of the State (i.e., become releases) and may not readily be observable to operators; for this reason, tanks must be lifted on racks/cradles/stilts (such that the tank bottom is observable), or either installed on an impermeable barrier (often in the form of a concrete pad or liner) or constructed with a double-bottom within.

Impermeable barriers and double bottoms must have a maximum permeability rate (to water) of 1×10^{-6} cm/sec, regardless of the type of petroleum stored. (Barriers, in particular, must not deteriorate in an underground environment, in the presence of petroleum, or due to the structural stresses of the tank.) Leaks that occur at the underside of the tank must also be observable to the operator, either through grooves/channels[358] molded or cut into the barrier, or through ports (also known as 'telltales') built into the edge of the interstitial space of the double bottom. Both the channels and the ports must cover the entire footprint of the tank and should be sloped such that leaks drain away from the tank (and into the observable area).

Impermeable barriers and double-bottoms may be considered forms of conventional tank SC, but the requirements for them are separate from those of (conventional/alternatives to) secondary containment – all Cat. 2/3 tanks not on racks/cradles/stilts must have them, regardless of design capacity or proximity to sensitive receptors. Impermeable barriers and double bottoms are also subject to walkthrough inspections[349].

Issues

- **Tank Wall Extending Past the Base of the Tank**

  Certain vertical tanks were mistakenly constructed to have the tank walls extend past the base of the tank, which made leaks unobservable from beside the tank. Inspectors that come across tank pads where the grooves/channels appear blocked by the tank wall should cite this as a violation.

- **Clay Liners Used as Impermeable Barriers**

  Clay liners are not acceptable as impermeable barriers: clay liners must be hydrated regularly to maintain their permeability, which is not possible when the tank is sitting on it.

[358] Facilities should ensure that the base of the tank is coated – or otherwise protected – to prevent corrosion and deterioration (particularly for field-constructed, single-bottom, on-ground tanks): channels molded/cut/built into the barrier often expose the tank to air, which could induce corrosion in the tank bottom, as could (compacted) sand under either the tank or in the double-bottom interstice.

Containment Sumps and Under-Dispenser Containment (UDC)

Containment sumps are liquid-tight containers often placed around pumps, piping joints/connections, ancillary equipment, and other related components, with the purpose of containing spills during normal tank system operation and replacement of any equipment within. There are three general types:

- *Tank-top sumps* are located by the tank and allow access to the submersible turbine pump (STP), solenoid/anti-siphon valves, operating valves, and any other equipment typically placed at the beginning (i.e., the most upstream point) of a piping run.
- *Transition sumps* are located at the middle of a piping run, often to allow access to connecting equipment between piping segments (and on rare occasion, pumps).
- *Dispenser sumps (or under-dispenser containment/UDCs)* are located beneath a dispenser, often to allow access to both the dispenser and any equipment connecting it to the buried piping (i.e., check/shear valves, risers, connectors, other transitional components beneath the dispenser, etc.)
    - UDCs are often rectangular/cuboid where tank-top and transition sumps are often cylindrical.
    - Dispenser sumps are also necessary when piping interstitial monitoring is being performed AND spills to the secondary piping have the potential to flow towards the dispenser and not the tank (e.g., a mountainside UST system where the tank is at a higher elevation than the dispenser).

Containment sumps are typically single-walled, but they may also be double-walled with interstice types like those of DW tanks.

Double-walled piping is often sloped to convey spill to a containment sump for leak monitoring. As such, the sump must be kept free of liquids, debris, and other miscellaneous objects (e.g., oil filters) which may reduce its containment capacity.

Sumps must also be kept in good working order. A leak is suspected when water/petroleum is found in the interstice of a double-walled sump, and the presence of water/petroleum cannot be explained. This unusual operating condition must be reported to the Spill Hotline within two hours after discovery. Containment sumps are also subject to walkthrough inspections[349].

Issues

- **Damaged Sumps**

  Inspectors should visually confirm that the containment sump has integrity – any holes, leaky perforations, or cracks signify a lack of tightness – but also that the operator did the same. As such, inspectors should ask operators for their assessment of the sump, especially when damaged.

- **(Evidence of the) Presence of Petroleum**

  Residue found in the containment sump typically indicates a prior spill (and subsequent removal of free product) which, when coupled with apparent integrity issues, means that petroleum was likely released to the lands and/or waters of the State. The inspector should then verify that this (suspected) leak was reported to the Spill Hotline.

- **Steel Under-Dispenser Containment**

  Some of the first under-dispenser containment products made commercially available in the 1990s was made from steel. These are not specifically required to have cathodic protection but are still susceptible to corrosion. Such UDCs are rarely used anymore, but inspectors that encounter them are advised to check for any signs of corrosion (that need to be addressed).

Corrosion Protection

Purpose

Metal tank system components undergo corrosion caused by electrochemical oxidation of metals when in contact with certain media/substances – this results in degradation of the component material and compromising its integrity, which in turn, may result in spills and even releases. Corrosion protection equipment helps reduce and/or eliminate this risk of degradation for metal components.

Requirements

Corrosion protection generally refers to methods/equipment that protect metal tank system components (that routinely contain petroleum) from external corrosion that occurs when the metal component is either:

- in contact with the ground (or any other electrolytes); or
- exposed to the elements.

Facilities must meet the following overall corrosion protection requirements[359] (as applicable).

SP4 Corrosion Protection	***Requirements***
General	Metal tank system components must be: • installed in accordance with the manufacturer's instructions (and an acceptable code of practice[360]); and • protected from corrosion. Field-installed cathodic protection (CP) systems must: • be designed by a corrosion expert; • allow determination of current operating status (for impressed current systems); and • be installed in accordance with the manufacturer's instructions (and an acceptable code of practice[360]). Surface coatings must be designed to prevent corrosion and deterioration.
Periodic Equipment Inspections/ Testing	• Cathodic protection systems must be tested for operability[361] (by a qualified CP tester) at least annually. ○ Testing must be performed in accordance with an acceptable standard. • Impressed current systems must be inspected for continuous, proper operation[361] at least every 60 days. • CP systems are also subject to walkthrough inspections[362] performed every 30 days.

Recordkeeping	*Retain:*
	• *Equipment Inspection/Testing Records:*
	  ○ *CP Test Records:* For three years
	  ○ *Impressed Current (IC) Inspection Records:* For three years
	  ○ *Walkthrough Inspection Records:* For three years
	• *Repair (and Post-Repair)[363] Records:* Until the tank system is permanently closed

DEC may require facilities to conduct additional inspections/testing if the facility has suspected leaks or inspections/testing that have not been performed. Facilities must complete this additional inspection/testing within ten days after receipt of the request, or DEC will conduct inspections/testing at the facility's expense.

[359] Corrosion protection requirements for SP4 tank systems are found in 6 NYCRR paragraphs 613-4.1(b)(1), (2) and (c)(2).
[360] See **Installation** on p. 294.
[361] CP testing and impressed current inspection requirements for SP4 tank systems are found in 6 NYCRR paragraphs 613-4.2(i)(2), (3), respectively.
[362] See **Walkthrough Inspections** on p. 301.
[363] See **Repairs** on p. 295.

Conventional Tank and Piping Corrosion Protection

Steel tanks in contact with the ground must utilize (at least) one of the following forms of corrosion protection and meet applicable requirements[364].

Corrosion Protection: SP4 Tanks	***Cat. 1 Tank***	***Cat. 2 Tank***	***Cat. 3 Tank***
Sacrificial Anodes	No standard(s) specified	*Designed, Fabricated, and Installed:* In accordance with an appropriate standard	*Designed, Fabricated, and Installed:* In accordance with API RP 651 (January 2007)[365]
	• *Test for CP Operability:* Annually, in accordance with one of the following[365]: ○ API RP 651 (January 2007) ○ NACE RP0193-2001 (2001) • *Retain CP Test Records:* For three years		
Impressed Current (IC)	No standard(s) specified	*Designed, Fabricated, and Installed:* In accordance with API RP 1632 (January 1983)[365]	*Designed, Fabricated, and Installed:* In accordance with API RP 651 (January 2007)[365]
	• *Test for CP Operability:* Annually, in accordance with one of the following[365]: ○ API RP 651 (January 2007) ○ NACE RP0193-2001 (2001) • *Inspect for IC Operability:* Every 60 days • *Retain CP Testing and IC Inspection Records:* For three years		

Surface coating is also required[366] for Cat. 2/3 SP4 tanks, except for the following:

- tanks located indoors (and away from direct sunlight);
- insulated tanks; and/or
- tanks storing heated petroleum.

Surface coatings are applied to protect the tank from the elements, which can corrode/degrade the tank wall; as such, the surface coating must be maintained accordingly.

[364] Conventional corrosion protection standards/requirements for SP4 tanks are found in 6 NYCRR subclauses 613-4.1(b)(1)(ii)(*a*)(*3*) & (iii)(*a*)(*3*).
[365] Facilities may also comply with a code of practice developed by a nationally recognized association or independent testing laboratory and approved by the DEC.
[366] Surface coating requirements for SP4 tanks are found in 6 NYCRR subclauses 613-4.1(b)(1)(ii)(*a*)(*2*) & (iii)(*a*)(*2*).

Metal piping (and ancillary equipment) in contact with the ground must utilize one of the following forms of corrosion protection and meet applicable requirements[367].

Corrosion Protection: SP4 Piping	***Cat. 1 Piping***	***Cat. 2 Piping***	***Cat. 3 Piping[368]***
Sacrificial Anodes[369]	*Designed, Constructed, and Installed:* • To provide a minimum of 30 years of protection • With monitors to check on the adequacy of the CP system		*Designed, Fabricated, and Installed:* In accordance with one of the following[365]: • API RP 1632 (January 1996; revised 2002) • NACE SP0169-2013 (2013) • NACE SP0285-2011 (2011) • STI R892 (January 2006)
	• *Test for CP Operability:* Annually, in accordance with an appropriate standard • *Retain CP Test Records:* For three years		
Impressed Current (IC)	*Designed, Constructed, and Installed:* • To provide a minimum of 30 years of protection • With monitors to check on the adequacy of the CP system		*Designed, Fabricated, and Installed:* In accordance with one of the following[365]: • API RP 1632 (January 1996; revised 2002) • NACE SP0169-2013 (2013) • NACE SP0285-2011 (2011) • STI R892 (January 2006)
	• *Test for CP Operability:* Annually, in accordance with an appropriate standard • *Inspect for IC Operability:* Every 60 days • *Retain CP Testing and IC Inspection Records:* For three years		

Alternative Piping Corrosion Protection

Corrosion protection for (metal) piping associated with field-constructed tanks (FCTs) with a design capacity greater than 50,000 gallons[370] may be challenging given conventional forms of cathodic protection. Such piping may then comply with the following alternative requirements[371] (as applicable) in lieu of their equivalent conventional counterparts.

Corrosion Protection: SP4 Piping	***Cat. 1 Piping*** ***(associated with FCTs > 50k gal.)***	***Cat. 2 Piping*** ***(associated with FCTs > 50k gal.)***	***Cat. 3 Piping[368]*** ***(associated with FCTs > 50k gal.)***
Sacrificial Anodes[369]	*Designed, Fabricated, and Installed:* In accordance with NACE SP0169-2013 (2013)[365]		
	• *Test for CP Operability:* Annually, in accordance with an appropriate standard • *Retain CP Test Records:* For three years		
Impressed Current (IC)	*Designed, Fabricated, and Installed:* In accordance with NACE SP0169-2013 (2013)[365]		
	• *Test for CP Operability:* Annually, in accordance with an appropriate standard • *Inspect for IC Operability:* Every 60 days • *Retain CP Testing and IC Inspection Records:* For three years		

[367] Conventional corrosion protection standards/requirements for SP4 piping/ancillary equipment are found in 6 NYCRR clauses 613-4.1(b)(2)(ii)(*b*) & (iii)(*b*).
[368] Metal Cat. 3 piping must be coated with a suitable dielectric material, especially when equipped with sacrificial anodes.
[369] Piping & ancillary equipment with sacrificial anodes must be electrically isolated from the tank and the dispenser.
[370] These tanks were previously deferred under 40 CFR Part 280.
[371] Alternative corrosion protection requirements for SP4 piping associated with FCTs (> 50k gal.) are found in 6 NYCRR subparagraphs 613-4.1(c)(2)(i) (ii).

Issues

- **Missing Test Ports**

  Permanent CP test ports are not strictly required on cathodically protected tank system components but are typically installed to facilitate testing; as such, the lack of test ports is not a violation, but is a strong indication that previous CP tests may not have been conducted correctly.

- **Tank System Components Made of Copper or Galvanized Steel (and Other Non-Steel Metals)**

  Modern tank systems rarely have copper or galvanized steel components, but inspectors will run into them occasionally. These components count as metal components that are not inherently corrosion-resistant and thus require cathodic protection (as with cathodically protected steel). Applicable CP test standards for such components may be slightly different, but the testing procedures/records will be largely identical.

- **Corroded Equipment in Containment Sumps**

  Inspectors may encounter corroded equipment (e.g., piping, submersible turbine pumps or STPs, line leak detectors) within containment sumps, often thought to be due to vapor intrusion from the tank storing ethanol-blended motor fuels. Inspectors are advised to note these on the inspection form but not cite them as violations, as long as the corroded equipment has not yet failed, and the enclosing sump is tight/not open to the lands and/or waters of the State.

- **Soil/Backfill in Sumps**

  Metal piping and ancillary equipment inside sumps are considered in contact with the ground when the sump is filled with soil or other backfill media (as is common downstate). Such components are susceptible to and must be protected from corrosion if in contact with earthen materials (e.g., soil, rocks, pea gravel, etc.). This can be done by booting the metal components, installing sacrificial anodes, or removing the earthen materials.

- **On-Ground Tanks**

  Impermeable barriers and double-bottoms (which must underlay Cat. 2/3 on-ground tanks) are not considered “ground” for the sake of corrosion protection. Facilities, however, should still ensure that the base of the on-ground tank is coated – or otherwise protected – to prevent corrosion and deterioration (particularly for field-constructed, single-bottom, on-ground tanks). Channels molded/cut/built into the impermeable barrier often expose the tank to air, which could induce corrosion in the tank bottom, as could (compacted) sand either under the tank or in the double-bottom interstice.

- **Failed Cathodic Protection Survey**

  A failed CP test does not, by itself, constitute a reportable spill; it does, however, mean that the tank system is noncompliant and must be either taken out of service to be repaired/replaced, or permanently closed.

- **Insulated Tanks**

  Tanks storing heated petroleum are often insulated (e.g., foam) to maintain the internal tank temperature. Facilities must ensure that the entire external surface of the tank is insulated to ensure that the tank is protected from corrosion and that water does not accumulate between the insulation and the tank shell.

Questions

CP_pre	***Is the required equipment present? Select all corrosion protection equipment that apply to the tank system, including those required, and any supplementary equipment. Record any inaccuracies with tank/piping type/CP or internal lining under INSP_comm (p. 2).***
Y	» No issues were found under this question.
NT	» *613-4.1(b)(1)(ii)(a)(3) / 4.1(b)(1)(iii)(a)(3):* The steel tank is not equipped with the required cathodic protection system (and is otherwise not protected from corrosion). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to: permanently close the tank system within 60 days after the date of the NOV; install a CP system for the unprotected tank (bottom) within 90 days after the date of the NOV; or either lift the tank on racks/cradles/stilts or install an impermeable barrier within 180 days after the date of the NOV. » *Additional Action(s):* Lifting the AST and/or installing an impermeable barrier is not feasible when the tank has a double-bottom (with sand in the interstitial space); in such cases, the facility must (submit a plan to) either close the tank or install a CP system.
NSC ***[SP4/SP5]***	» *613-4.1(b)(1)(ii)(a)(2) / 4.1(b)(1)(iii)(a)(2):* There is no surface coating on the AST exterior. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must coat the tank exterior and submit a photograph showing the coated exterior.
XPT	» Tank corrosion protection is not required because the tank is either made of a noncorrodible material or electrically isolated from the ground.
XTT ***[SP3/SP4/SP5]***	» Tank corrosion protection is not required because the tank is a SP4/SP5, Cat. 1 AST.
NP	» *613-4.1(b)(2)(ii)(b) / 4.1(b)(2)(iii)(b) / 4.1(c)(2)(i) / 4.1(c)(2)(ii) / 4.1(c)(2)(iii):* The (metal) piping/ancillary equipment is not equipped with the required cathodic protection system (and is otherwise not protected from corrosion). » *Note(s):* This Response does not include any piping/ancillary equipment that are partly not protected from corrosion; such violations should be captured under Response **NA** instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to replace the unprotected piping/ancillary equipment (with a corresponding tank system component that is either made of a noncorrodible material or electrically isolated/cathodically protected) within 60 days after the date of the NOV.
NA	» *613-4.1(b)(2)(ii)(b) / 4.1(b)(2)(iii)(b) / 4.1(c)(2)(i) / 4.1(c)(2)(ii) / 4.1(c)(2)(iii):* A portion of the piping/ancillary equipment is not protected from corrosion. » *Note(s):* This Response does not include any piping/ancillary equipment that are wholly not protected from corrosion; such violations should be captured under Response **NP** instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either: install a cathodic protection system for/electrically isolate the unprotected portion of the piping/ancillary equipment and submit documentation for the cathodically protected/electrically isolated equipment; or replace (and submit replacement documentation for) the piping/ancillary equipment with a corresponding tank system component that is either made of a noncorrodible material or electrically isolated/cathodically protected.
XPP	» Piping/ancillary equipment corrosion protection is not required because the tank system component is either made of a noncorrodible material or electrically isolated from the ground.
XTP ***[SP3/SP4/SP5]***	» Piping/ancillary equipment corrosion protection is not required because the tank system component is a Cat. 1 component that is part of a SP4/SP5 AST system.

CP_gwo	Is the equipment in good working order?
Y	» No issues were found under this question.
TMP	» *613-1.12 / 4.2(i)(1) / 4.2(i)(2)(ii):* The cathodic protection system is not providing adequate protection to the tank. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to either repair or replace the cathodic protection system within 90 days after the date of the NOV.
SCF ***[SP4/SP5]***	» *613-1.12 / 4.1(b)(1)(ii)(a)(2) / 4.1(b)(1)(iii)(a)(2):* The surface coating on the AST exterior either is faded or no longer covers the whole exterior. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must re-coat the tank exterior and submit a photograph showing the coated exterior.
PMP	» *613-1.12 / 4.2(i)(1) / 4.2(i)(2)(ii):* The cathodic protection system is not providing adequate protection to the piping/ancillary equipment. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to either repair or replace the cathodic protection system within 90 days after the date of the NOV.
RO	» *613-1.12 / 4.2(i)(1):* The rectifier is not operational. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either repair or replace (and submit repair/replacement documentation for) the rectifier.
RP	» *613-1.12 / 4.2(i)(1):* The rectifier does not have continuous power (but is otherwise operational). » *Note(s):* This Response does not include any rectifier that has had occasional power interruptions (e.g., someone turned off the power); such violations should be captured under Response **RCO** instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either repair or reconfigure (and submit repair/reconfiguration documentation for) the impressed current system such that the rectifier has continuous power.
RCO	» *613-1.12 / 4.2(i)(1):* The rectifier clock indicates that the rectifier has not operated continuously (but is otherwise operational). » *Note(s):* This Response does not include any rectifier that has periodic power interruptions (e.g., due to how the CP system was designed); such violations should be captured under Response **RP** instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either repair or reconfigure (and submit repair/reconfiguration documentation for) the impressed current system such that the rectifier has continuous power.
LF	» *613-1.12:* The lining no longer meets the original design specifications. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to either repair the internal lining or permanently close the tank system, within 60 days after the date of the NOV. » *Additional Action(s):* Lining inspections – particularly those performed in accordance with API RP 1631 (June 2001) – often include an assessment of the tank wall thickness (typically quantitative) to determine if the tank either is still structurally sound or still has sufficient thickness (compared to its original thickness) to continue service. The tank system must be closed if the tank wall either is too thin or already has holes (through corrosion).

CP_itm	*Is the equipment being tested/monitored periodically?*
Y	» No issues were found under this question.
NTT	» *613-4.2(i)(2):* Cathodic protection testing is not being performed for the tank. » *Note(s):* Test results are the primary evidence that cathodic protection testing is being performed; if testing is being performed, but test results are not being retained for at least three years, Response **NRT** under Question **CP_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a cathodic protection test.
PTT	» *613-4.2(i)(2)(i):* Cathodic protection testing is not being performed for the tank at least annually. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a cathodic protection test. » *Additional Action(s):* There is no need for the curative measure if the most recent annual cathodic protection test was performed but a previous one was not; this violation, however, should still be cited.
NPT	» *613-4.2(i)(2):* Cathodic protection testing is not being performed for the piping/ancillary equipment. » *Note(s):* Test results are the primary evidence that cathodic protection testing is being performed; if testing is being performed, but test results are not being retained for at least three years, Response **NRP** under Question **CP_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a cathodic protection test.
PPT	» *613-4.2(i)(2)(i):* Cathodic protection testing is not being performed for the piping/ancillary equipment at least annually. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a cathodic protection test. » *Additional Action(s):* There is no need for the curative measure if the most recent annual cathodic protection test was performed but a previous one was not; this violation, however, should still be cited.
NIC	» *613-4.2(i)(3):* Impressed current inspections are not being performed. » *Note(s):* Inspection records are the primary evidence that impressed current inspections are being performed; if inspections are being performed, but either the inspections are not being recorded or records are not being retained for at least three years, Response **NRI** under Question **CP_rec** should be selected instead. » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must perform (and submit the records of) an impressed current inspection.
PIC	» *613-4.2(i)(3):* Impressed current inspections are not being performed at least every 60 days. » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must perform (and submit the records of) an impressed current inspection. » *Additional Action(s):* There is no need for the curative measure if the most recent 60-day impressed current inspection was performed but a previous one was not; this violation, however, should still be cited.

CP_rec	***Are the inspection records being retained?*** ***Note: CP test and impressed current inspection records must be retained for 3 years. Lining inspection records must be retained for 5 years.***
Y	» No issues were found under this question.
NRT	» *613-4.2(i)(4):* Cathodic protection test results are not being retained (for the tank) for at least three years. » *Note(s):* Test results are the primary evidence that cathodic protection testing is being performed; if the test results are missing, cathodic protection testing is likely not being performed (and Response **NTT** under Question **CP_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the results of the last test, or perform (and submit the results of) a cathodic protection test.
NRP	» *613-4.2(i)(4):* Cathodic protection test results are not being retained (for the piping) for at least three years. » *Note(s):* Test results are the primary evidence that cathodic protection testing is being performed; if the test results are missing, cathodic protection testing is likely not being performed (and Response **NTP** under Question **CP_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the results of the last test, or perform (and submit the results of) a cathodic protection test.
NRI	» *613-4.2(i)(4):* Impressed current inspections are not being recorded, or records are not being retained for at least three years. » *Note(s):* Inspection records are the primary evidence that impressed current inspections are being performed; if the records are missing, impressed current inspections are likely not being performed (and Response **NIC** under Question **CP_itm** should be selected instead). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must either submit the records of the last three impressed current inspections, or perform (and submit the records of) an impressed current inspection.
CP_com	***Was the inspection complete/adequate?***
Y	» No issues were found under this question.
TR	» *613-4.2(i)(2):* Not enough readings were taken (during the cathodic protection test) to accurately assess whether the cathodic protection system is providing adequate protection to the tank. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a cathodic protection test.
PR	» *613-4.2(i)(2):* Not enough readings were taken (during the cathodic protection test) to accurately assess whether the cathodic protection system is providing adequate protection to the piping/ancillary equipment. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a cathodic protection test.
ICI	» *613-4.2(i)(3):* The impressed current inspection records do not have all of the required information. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an impressed current inspection and include all required information.

CP_rat	***If repairs were made, are the repairs appropriate/adequate, and was the equipment tested after the repair?***
Y	» No issues were found under this question.
IN	» *613-4.2(j)(3) / 4.2(j)(4):* Repairs performed to either the cathodic protection system or a cathodically protected tank system component were either inappropriate or inadequate. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either: take the tank system out of service and submit a plan to properly repair the cathodic protection system/cathodically protected tank system component (and perform/submit the results of a cathodic protection test) within 90 calendar days after the date of the NOV; or submit a plan to permanently close the tank system within 60 days after the date of the NOV.
NT	» *613-4.2(i)(2)(i) / 4.2(j)(9):* A cathodic protection test was not performed, or was not performed within six months, after structural repairs to either the cathodic protection system or a cathodically protected tank system component. » *Note(s):* Cathodic protection systems not providing adequate protection to the repaired tank system component should be captured under Question **CP_gwo**, Response **TMP**/**PMP**; all other issues found with the cathodic protection test should be captured under this Response. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a cathodic protection test.

Options

Sacrificial Anodes

Galvanic corrosion is an electrochemical reaction that occurs during oxidation of metals in contact with an electrolytic environment (i.e., soil). This reaction can be exploited to protect metal equipment from corrosion, by attaching sacrificial anodes – blocks of metal (often zinc) with a more negative electric potential than the tank system component – that preferentially corrode, protecting the component in the process (hence the name "sacrificial" anode).

Sacrificial anodes are cathodic protection (CP) systems often used on tank system components where 95% of the component's surface area is coated or otherwise isolated from the ground. Components that either are too big (i.e., 5% of the surface area is too large to protect with anodes) or have unknown surface areas (i.e., components to be retrofitted) must have impressed current instead.

Sacrificial anodes also have a finite life – the tank system component will be protected from corrosion until the metal block is exhausted (the rate of which is affected by the surrounding soil conditions). To this end, the operability of sacrificial anodes – as a form of corrosion protection – must be tested (by a qualified CP tester):

- within six months after CP system installation/reinstallation;
- within six months after CP system repair; and
- annually thereafter.

Annual CP test records must be retained for (at least) three years and have the following information.

	CP Test – Sacrificial Anodes

SP4 Corrosion Protection Records:
 	
Required Information
	• Tank ID number
	• Date/time of CP test
	• A statement from the technician that the CP system was tested in accordance with an acceptable standard
	• Type of equipment used
	• An evaluation of the electrical continuity of the tank system
	• (Valid) CP readings for the following (as applicable; must be -850 mV or less):
	  ○ Tanks (at least three measurements; more, if necessary, per tank size):
	  ▪ The middle of the tank
	  ▪ Both ends of the tank (along the center line)
	  ○ Piping (at least one measurement per run)
	  ○ Ancillary equipment not isolated from the ground (at least one measurement)
	  ○ A remote soil location
	• A statement from the technician as to:
	  ○ Operating status of the CP system
	  ○ Tester's recommendations
	  ○ Any repairs to cathodically protected components conducted within the past year
	• Test results (i.e., pass/fail)
	• Technician's information:
	  ○ Qualifications/credentials
	  ○ Company name/address
	  ○ Name/signature
	• Any relevant notes regarding the inspection, weather/geologic conditions at the time of the test, and the tank system/facility (i.e., physical changes to the site since CP system installation that could impact monitoring), etc.

Metal tank system components with (nearly) depleted anodes (as indicated by a failed CP test) must then either be immediately replaced with new anodes or retrofitted with an impressed current system – as circumstances dictate – to protect against corrosion; however, if the component has already been corroded, the component must first be either repaired or replaced.

Sacrificial anodes are also subject to walkthrough inspections[362].

Issues

- **Cathodic Protection Survey Readings for Sacrificial Anodes**

  CP tests for sacrificial anodes must not be performed through frozen soil or through a concrete or asphalt pad, unless direct access is provided (e.g., by drilling holes).

Impressed Current (IC)

Impressed current systems maintain the optimum structure-to-soil potential between metal tank system components and the surrounding electrolyte (i.e., soil), by linking the component to an anode – made of high silicon-chromium cast iron or graphite – using impressed direct current (DC) often transformed by a rectifier from alternating current (AC). The current ensures that the electric potential of the anode is always more negative than that of the component, thereby protecting the component from corrosion.

IC systems provide versatility to the level of corrosion protection required for metal tank system components and thus are preferred over sacrificial anodes in soil conditions with high resistivity (i.e., dry/arid soil, sand, or dirt) and for components too big to be protected by sacrificial anodes.

These systems, however, require proper installation/calibration and a continuously powered rectifier. To this end, the operability of IC systems – as a form of corrosion protection – must be tested (by a qualified CP tester):

- within six months after CP system installation/reinstallation;
- within six months after CP system repair; and
- annually thereafter.

Impressed current systems must also be inspected every 60 days for continuous, proper operation.

Annual CP test and IC inspection records must be retained for (at least) three years and have the following information.

	CP Test – Impressed Current	***Impressed Current Inspection***

SP4 Corrosion Protection Records:
 	
Required Information
	• Tank ID number
	• Date/time of CP test
	• A statement from the technician that the CP system was tested in accordance with an acceptable standard
	• Type of equipment used
	• An evaluation of the electrical continuity of the tank system
	• (Valid) CP readings for the following (as applicable; must be -850 mV or less):
	  ○ Tanks (at least three measurements; more, if necessary, per tank size):
	  ▪ The middle of the tank
	  ▪ Both ends of the tank (along the center line)
	  ○ Piping (at least one measurement per run)
	  ○ Ancillary equipment not isolated from the ground (at least one measurement)
	  ○ A remote soil location
	• A report on 100-mV polarization decay (if any readings do not meet the -850-mV requirement)
	• Amperage readings (from the rectifier) at the time of the CP test
	• A statement from the technician as to:
	  ○ Operating status of the CP system
	  ○ Tester's recommendations
	  ○ Any repairs to cathodically protected components conducted within the past year
	• Test results (i.e., pass/fail)
	• Technician's information:
	  ○ Qualifications/credentials
	  ○ Company name/address
	  ○ Name/signature
	• Any relevant notes regarding the inspection, weather/geologic conditions at the time of the test, and the tank system/facility, etc.
		• Status of the rectifier (i.e., is the rectifier on)
		• Number of hours of operation since the last inspection
		  ○ Should be roughly equal to 1440 hours if inspections are performed every 60 days
		• Voltage and amperage readings at the time of:
		  ○ Most recent CP test
		  ○ IC inspection
		• A comparison of the two sets of amperage readings (the inspection readings must be within 20% of the readings from the most recent CP test)

Deviations from the IC inspection standards (i.e., 1440 hours of continuous operation, or ≤ 20% discrepancy between inspection/CP test amperage readings) and/or failed CP test results, may indicate a problem with the impressed current system and/or the cathodically protected tank system component, and should elicit either an explanation or an immediate action (i.e., repair, diagnostic CP test, taking the tank system out of service, etc.) from the facility.

Impressed current systems are also subject to walkthrough inspections[362].

Issues

- **Pauses in Rectifier Operation**

  Inspectors may find that the impressed current system lost power temporarily but should recognize that certain situations are beyond the facility's control (though still considered violations) and may not warrant penalties and/or a consent order. The owner/operator should note any losses of power in their records and include the reason(s) why the power was lost and for how long. Rectifiers should be on a circuit breaker separate from the facility's normal breakers to avoid these pauses in operation. Rectifier clocks – while not strictly required – are also recommended as they help facilities track these pauses (and respond to them as soon as possible

Color Code and (Tank) Label

Purpose

Color coding ports allows for quick (visual) identification of either the form of petroleum being stored in a specific tank, or the tank system equipment accessible from the surface. Doing so helps the person responsible for transfer activities avoid delivering a petroleum type to the wrong tank (i.e., cross-drops), which can result in off-spec petroleum, equipment failure/corrosion due to incompatibility between the tank and the petroleum, or even direct releases to the lands and/or waters of the State (if delivered to a monitoring well).

Tank labels provide a means of identifying a tank and its specifications quickly and without the need for other documentation (e.g., installation records, registration certificate); this is particularly useful during a delivery, a change-in-service, an emergency, or if the tank has been abandoned.

Requirements

Fill ports must be color coded[372] (e.g., painted, spray-painted, molded, etc.) in accordance with API RP 1637 (April 2020) to denote the petroleum type currently stored in the tank system. Other access ports (i.e., not for deliveries) must similarly be color coded to identify the equipment within. Coding schemes for some common petroleum types and tank system equipment are described below.

SP4 Color Coding	***Petroleum/Equipment Subtype***		***Background Color***	***Superimposed Text/Symbol***
Motor Fuels	*Race Fuel*	*E0*	Pink	Black ‘0’
		≤ E10		
	Gasoline/Ethanol Blends (≤ E10)	*Regular (87 Octane)*	White	
		Midgrade (88-89 Octane)	Blue	
		Premium (≥ 90 Octane)	Red	
	(Higher) Ethanol Blends	*E15*	Copper	Black ‘E15’
		> E15 and < E85		Black ‘EXX’ (where ‘XX’ denotes ethanol content)
		E85		Black ‘E85’
	Biodiesel (On-Road; ULSD)	*≤ B5*	Yellow	
		> B5 and < B99.9		Black ‘BXX’ (where ‘XX’ denotes biodiesel content)
	Biodiesel (Off-Road; dyed red)	*≤ B5*		Red ‘OFF’
		> B5 and < B99.9		Red ‘OFF’ and Black ‘BXX’ (where ‘XX’ denotes biodiesel content)
	Biodiesel	*B99.9/B100*	Light Blue	
	Renewable Diesel		Turquoise	
Heating Fuels/ Fuel Oils	*Kerosene*		Brown	
	No. 1 Fuel Oil		Dark Green	Black ‘1’
	No. 2 Fuel Oil			Black ‘2’
	Biofuel Oil			Black ‘BXX-X’ (where ‘XX’ denotes biodiesel content, and ‘X’ denotes fuel oil grade 1 or 2)
Miscellaneous	*Used Oil*		Light Gray	
	Monitoring Well[373]		White	Black triangle
	(Dual Point) Vapor Recovery		Orange	

Petroleum types not included in API RP 1637 (April 2020) must be identified at or near the fill port (e.g., with stenciled text, stickers, placards, etc.).

[372] Fill port color coding, tank label, and monitoring well requirements for SP4 tank systems are found in 6 NYCRR paragraphs 613-4.2(d)(1 – 3).

[373] 6 NYCRR paragraph 613-4.2(d)(3): Monitoring wells must be sealed or capped to prevent liquids from entering from the surface.

Fill ports for tanks must also have a tank label[372]. These refer to plastic/metal plates or stenciled information placed at or near the fill port and are primarily used by persons responsible for transfer activities: prior to the transfer, the person reads the label to ensure that the correct type/amount of petroleum will be made to the appropriate tank, thereby avoiding spills/overfills and cross-drops. Tank labels must have the following information.

SP4 Tank Label: ***Required Information***	***Cat. 1 Tank***	***Cat. 2 Tank***	***Cat. 3 Tank***
	• Tank ID number • Tank design capacity (i.e., the volume of petroleum the tank is designed to hold) • Tank working capacity (i.e., the portion of the design capacity that can be filled before the overfill prevention device is activated) ○ If multiple overfill prevention devices are installed (whose working capacities differ), the lowest working capacity must be listed.		

Issues

- **Identifiability/Legibility**

  Fill port color coding/markings must be readily identifiable. Faded coloring and misshapen labels must be redone. Markings should also be extended to the surrounding crown/concrete to avoid using the wrong lid/cap on the wrong fill port. When text is used for petroleum types not included in API 1637, the text should be at least 3” in height and ½” in stroke.

  Information on the tank label must similarly be legible – the information is of no use to anyone if it cannot be read.

- **Compatibility/Durability of Fill Port Markings**

  There are no strict requirements regarding the type of material(s) used for either the color code or the tank label, but these should be able to withstand exposure to petroleum (vapors), inclement weather, and vehicle traffic.

- **Remote Fill Ports**

  The petroleum type stored in the tank system must also be identified (e.g., using the API 1637 color code or stenciled text, stickers, placards, etc.) at the tank, if the tank has a remote fill port.

- **Fill Port Manifolded to Multiple Tanks**

  If a fill port is manifolded to multiple tanks:

  - the different types of stored petroleum must be identified (e.g., with a placard) near the fill port, in lieu of color coding in accordance with API RP 1637 (April 2020); and
  - the tank labels must be placed adjacent to the fill port, but each label must be paired with the corresponding fill port (non-color code) identification such that the person responsible for transfer activities can easily find the label that goes with each tank.

- **Color Coding for Fill Ports with Coaxial Vapor Recovery**

  Fill ports for tanks storing gasoline – and any other gasoline blends – may be equipped coaxial vapor recovery: the transfer of gasoline and the removal of the displaced fumes are done through the same fill port, which increases the risk of cross-drops into the tank. As such, the fill port should feature an orange ring immediately surrounding the color coding for the stored gasoline (blend).

Questions

CL_pre	***Is the required equipment present?***
Y	» No issues were found under this question.
NFC	» *613-4.2(d)(2):* The fill port is not color coded (or otherwise marked). » *Note(s):* Fill ports that are marked instead of being color coded accordingly should be captured under Question **CL_gwo**, Response **CIN**. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must properly color code (or mark) the fill port and submit a photograph showing the color coded/marked fill port.
XPF	» Fill port color coding/marking is not required because the tank does not have a fill port.
NWC	» *613-4.2(d)(3):* The monitoring wells are not color coded (or otherwise marked), or do not have (marked) lids. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must clearly identify the monitoring wells and submit a photograph showing the marked/color coded lids. » *Additional Action(s):* The facility as-built plan (if required) must also make note of all monitoring wells (and their locations) on site.
XPW	» Monitoring well color coding/marking is not required because the tank system does not have monitoring wells.
NL	» *613-4.2(d)(1):* A tank label is not present at (or near) each fill port associated with the tank. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must install a tank label and submit a photograph showing the fill port(s) with the new tank label.
CL_gwo	***Is the equipment in good working order?***
Y	» No issues were found under this question.
CIN	» *613-1.12 / 4.2(d)(2):* The color coding/marking on the fill port are either unclear or indicative of something else (e.g., a different petroleum type or a monitoring well). » *Note(s):* This Response also includes any such ports with either faded/unidentifiable or inaccurate color coding/markings. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must properly color code (or mark) the fill port and submit a photograph showing the color coded/marked fill port.
WIM	» *613-1.12 / 4.2(d)(3):* The color coding/marking on the monitoring wells are either unclear or indicative of something else (e.g., a fill port). » *Note(s):* This Response also includes any such ports with either faded/unidentifiable or inaccurate color coding/markings. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must properly color code (or mark) the monitoring wells and submit a photograph showing the color coded/marked lids.
LIN	» *613-1.12 / 4.2(d)(1):* The tank label has either incomplete or inaccurate information. » *Note(s):* This Response also includes any faded/unidentifiable tank labels. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must rewrite or replace the tank label and submit a photograph showing the fill port with the rewritten/replaced tank label.
CL_mis	***Are there any other observed violations?***
MWS	» *613-4.2(d)(3):* The monitoring wells are not capped/secured (to prevent liquids from entering from the surface). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must cap/secure the monitoring wells and submit a photograph showing the capped/secured wells.

Overfill Prevention

Purpose

Overfill prevention devices are installed on tank systems such that the person responsible for the delivery knows when to stop the transfer; this helps reduce the risk of overfills, which comprise a large fraction of preventable spills.

Requirements

Overfill prevention (OP) generally refers to equipment designed to prevent the overfilling of a tank during a delivery. Facilities must meet the following overall overfill prevention requirements[374] (as applicable).

SP4 Overfill Prevention	***Requirements***
General	OP equipment must be: • installed in accordance with the manufacturer's instructions (and an acceptable code of practice[375]); • able to prevent overfills by either shutting off/restricting flow into the tank or alerting the person responsible for transfer activities, when the tank is filled to its working capacity[376]; and • appropriate for the type of delivery made to the tank system and all other tank system equipment installed.
Periodic Equipment Inspections	OP equipment are subject to walkthrough inspections[377] performed every 30 days.
Recordkeeping	*Retain Walkthrough Inspection Records:* For three years

Tank Overfill Prevention

Tanks must utilize one (or more) of the following forms of overfill prevention and meet applicable requirements[374].

Overfill Prevention: SP4 Tanks	***Cat. 1 Tank***	***Cat. 2 Tank***	***Cat. 3 Tank***

Automatic Shutoff Valve (ASV)	• *Acceptable for:*
	  ○ Gravity-head deliveries
	  ○ Pressurized deliveries (if designed to handle higher pressures/flow rates)
	• *Designed, Constructed, and Installed:* To automatically shut off flow into the tank:
	  ○ when the tank is no more than 95% full; or
	  ○ so that none of the fittings located on top of the tank are exposed to petroleum (due to overfilling)		

High-Level Alarm (HLA)	• *Acceptable for:*
	  ○ Gravity-head deliveries
	  ○ Pressurized deliveries
	• *Designed, Constructed, and Installed:* To alert the person responsible for transfer activities to stop the delivery when:
	  ○ when the tank is no more than 90% full; or
	  ○ one minute before overfilling so that none of the fittings located on top of the tank are exposed to petroleum (due to overfilling)		

Level Gauge	• *Acceptable for:*
	  ○ Gravity-head deliveries
	  ○ Pressurized deliveries
	• *Designed, Constructed, and Installed:*
	  ○ to accurately show the level/volume of petroleum in the tank; and
	  ○ to be accessible to the person responsible for the transfer, such that the level/volume of petroleum in the tank can be conveniently read from the fill port		

[374] Overfill prevention requirements for SP4 tank systems are found in 6 NYCRR paragraph 613-4.1(b)(3).
[375] See **Installation** on p. 294.
[376] 6 NYCRR subdivision 613-1.3(cd): *Working capacity* means the portion of the design capacity of a tank that may be filled before engaging the overfill prevention device, reduced by an allowance for freeboard and petroleum expansion.
[377] See **Walkthrough Inspections** on p. 301.

Issues

- **Installation at the Correct/Appropriate Height**

  Inspectors who encounter tanks with automatic shutoff valves, ball float valves, or high-level alarms not set to activate at default working capacities (i.e., 90 or 95% of the design capacity, as applicable) should verify that the OP equipment is installed correctly, by reviewing either the installation records or the delivery records. Installation records should include calculations that justify the alternative actuation height, while delivery records should reveal any overfills (or deliveries that result in exceedance of the working capacity) – large and/or frequent overfills warrant discussion with the operator to verify if the actuation height is appropriate (or needs lowering).

  Actuation height can also be verified through the tank monitoring console (or any standalone consoles for high-level alarms). Any recent repair or servicing records (for the OP device) may also specify the actuation height.

- **Ball Float Valves as Equivalent Overfill Prevention Devices**

  Ball float valves – by themselves – must not be used to meet overfill prevention requirements, as aboveground tanks must be fitted with emergency pressure relief valves that would act as a vent when the ball float valve is activated. The relief valve then becomes an avenue for a spill (or even a release).

Questions

OP_rc	***OP equipment: select all OP equipment that apply to the tank, including those required, and any supplementary equipment installed.***
HLA	» High Level Alarm
ASV	» Automatic Shut-Off Valve
BFV	» Float Vent Valve
LG	» Level Gauge
O	» Other
N	» *613-4.1(b)(3):* The tank is not equipped with the required overfill prevention equipment. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid overfill prevention device.
NX	» *613-1.4(b):* The overfill prevention equipment could not be accessed for inspection (e.g., locked/blocked fill port, high-level alarm console in a locked room, vent pipe extractor tee either fused or buried). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must submit documentation that an overfill prevention device is present and in good working order/properly installed. » *Additional Action(s):* The inspector should conduct a follow-up inspection (where possible) to observe the overfill prevention equipment rather than rely on installation documentation or photographs from the facility.
OP_ri	***Is the registered OP equipment accurate?***
Y	» No issues were found under this question.
IN	» *613-1.9(a)(4):* The registered overfill prevention equipment is inaccurate. » *Note(s):* This Response does not include expired facility registrations, inaccurate facility information, unregistered tanks, or unregistered facilities; such violations should be captured under Question **REG_info**. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must correct the site registration online to reflect the overfill prevention equipment. » *Additional Action(s):* The inspector should note the specific inaccuracy with the overfill prevention under Question **OP_nov**, to include it in the list of registration discrepancies (in the NOV) that need to be corrected.

OP_nov	Which OP equipment should be noted in the NOV?
OP_val	**Is the equipment valid for the tank system?**
Y	» No issues were found under this question.
SLB	» The ball float valve is not required for the tank or supplements a different OP device that is being used to meet overfill prevention requirements. » *Note(s):* Ball float valves may be rendered inoperable by certain tank system components, or the type of deliveries made to the tank; in such cases, the ball float valve may need to be uninstalled.
LGB [SP3/SP4/SP5]	» *613-4.1(b)(3)(i)(a):* The level gauge either does not cover the entire height of the tank or is equipped on a tank that is too big/tall (and there are no other valid overfill prevention equipment in use). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid overfill prevention device.
SLG	» The level gauge is not required for the tank or supplements a different OP device that is being used to meet overfill prevention requirements.
VW	» *613-4.1(b)(3)(i):* The vent whistle is not a valid overfill prevention device for the tank (and there are no other valid overfill prevention equipment in use). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid overfill prevention device.
SVW	» The vent whistle is not required for the tank or supplements a different OP device that is being used to meet overfill prevention requirements.
OP_gwo	**Is the equipment in good working order?**
Y	» No issues were found under this question.
O	» *613-1.12 / 4.1(b)(3)(i):* The overfill prevention equipment is inoperable. » *Note(s):* The overfill prevention equipment is considered inoperable if any of the following is true: - the automatic shutoff valve has been tampered with/is obstructed; - the automatic shutoff valve is not oriented properly (e.g., the flapper does not open towards the far end of the tank, the valve is upside down); - the high-level alarm test button/function does not work; - the equipment is corroded/degraded; - the equipment is inaccurate/uncalibrated (such that the person responsible for the transfer cannot tell when to stop the flow of petroleum); - the device does not activate when the tank is filled to its working capacity; or - the tank has been repeatedly filled beyond its working capacity, per the delivery records. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must repair or replace (and submit repair/replacement documentation for) the overfill prevention equipment.
BFV	» *613-1.12 / 4.1(b)(3)(i) / 4.1(b)(3)(ii):* The ball float valve is rendered inoperable by either another tank system component or the type of deliveries made to the tank. » *Note(s):* Ball float valves should not be used with: - automatic shutoff valves when the ball float valve activates first; - suction piping (i.e., suction pumps/air eliminators); - coaxial Stage I vapor recovery; - additional tank-top openings (e.g., fill ports, gauging ports, dual-point Stage I vapor recovery ports, etc.) without their own "trap-door" devices (e.g., check valves) or ball float valves; - tank systems that receive pressurized deliveries; or - SP4/SP5 ASTs. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either address the equipment incompatibility, or install/utilize (and submit documentation of) a valid overfill prevention device. » *Additional Action(s):* Addressing the equipment compatibility may not always be feasible/practical, in which case, the facility may have to utilize either an automatic shutoff valve or a high-level alarm.

ASV	» *613-1.12 / 4.1(b)(3)(i) / 4.1(b)(3)(ii):* The automatic shutoff valve is rendered inoperable by either another tank system component or the type of deliveries made to the tank. » *Note(s):* Automatic shutoff valves should not be used with: - ball float valves when the automatic shutoff valve activates second; or - tank systems that receive pressurized/gravity head deliveries (i.e., specific delivery types require certain designs). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either address the equipment incompatibility, or install/utilize (and submit documentation of) a valid overfill prevention device. » *Additional Action(s):* Addressing the equipment compatibility may not always be feasible/practical, in which case, the facility may have to utilize a high-level alarm.
AV	» *613-1.12 / 4.1(b)(3)(i)(c) / 4.1(b)(3)(i)(e):* The high-level alarm is not audible/visible (during typical weather/working conditions) from every fill port associated with the tank. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must repair or replace (and submit repair/replacement documentation for) the high-level alarm.
LGR	» *613-1.12 / 4.1(b)(3)(i)(a):* The level gauge cannot be conveniently read from every fill port associated with the tank. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either relocate (and submit installation documentation for) the level gauge or install/utilize (and submit documentation of) a valid overfill prevention device.
ACL	» *613-1.12 / 4.1(b)(3)(i):* The overfill prevention equipment is not set to activate at the appropriate level. » *Note(s):* This Response does not include overfill prevention equipment that do not activate (even when set at the appropriate level); such violations should be captured under Response **O** instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must reset the overfill prevention device to activate at an appropriate level and submit documentation justifying the new actuation height/working capacity.

Options

Automatic Shutoff Valve (ASV)

Automatic shutoff valves are mechanical devices installed within the drop tube of the fill pipe and utilize a float connected to a fill valve: the float rises as the tank is filled, which then causes the incoming petroleum to push the fill valve down. This shuts off flow into the tank, causing a visible movement in the delivery hose which tells the person responsible for the transfer to stop filling. A small hole at the side of the shutoff valve allows the delivery person to drain the contents of the hose into the tank (albeit at a much lower rate).

Two variants of the ASV exist, mainly differing on the type of float used:

- The older design has a flapper arm which hinges upward (hence the name "flapper valve") and towards the other end of the underground tank.
  - It is prone to mechanical issues with both the float arm and the hinge.
  - Verifying that a flapper valve is in good working order requires its removal from the fill pipe.
- The newer design has a cylindrical (or semi-cylindrical) float that rises vertically.
  - It has a more enclosed construction (mostly to better avoid breaking components).
  - These cylindrical floats may be tested for operability without disassembly (using an included testing tool).

Both designs are often only compatible with gravity head deliveries. Pressurized deliveries are known to interfere with an ASV's ability to close, which often results in petroleum spraying out of the fill pipe when disconnecting the delivery hose; to this end, a modern, more robust design was created for aboveground tanks to handle higher pressures and prevent sprays. Peddle trucks with loose fills also should not be used to deliver petroleum to tanks with ASVs; not only are peddle trucks and loose fills outlawed by the Fire Code[378], but the nozzles for loose fills also directly bypass the shutoff valve, making overfills more likely.

ASVs must be set to the appropriate actuation height, in accordance with one of the following:

- The working capacity is set to 95% of the tank design capacity.
  - ASVs are often set to meet this out of convenience: a 5% ullage (i.e., the volume of empty space within the tank) is easier to calculate and often already accounts for the fittings.
- The ASV activates before the fittings at the top of the tank are exposed to the stored petroleum.
  - ASVs are set up to meet this only when the tank is either:
    - too big, such that the unused 5% of the design capacity would be a considerable storage volume; or
    - too small, such that a 5% ullage does not prevent wetting of the fittings.

The type of deliveries made to the tank should also be considered for the chosen working capacity:

- Low flowrates (i.e., gravity head deliveries) mean more control over the delivery, allowing for a higher working capacity.
- High flowrates (i.e., pressurized deliveries) mean less control over the delivery, necessitating a lower working capacity.

Automatic shutoff valves must also be kept in good working order; to this end, the operability of ASVs – as an overfill prevention device – must be verified:

- at valve installation/reinstallation; and
- within 30 days after valve repair.

Automatic shutoff valves are also subject to walkthrough inspections[377].

[378] NYS Fire Code (2020) 5704.2.9.7.6: The fill pipe (for aboveground tanks) must be provided with a means for making a direct connection to the tank vehicle's fuel delivery hose so that the delivery of fuel is not exposed to the open air during the filling operation.

Issues

- **Automatic Shutoff Valve with Other Overfill Prevention Equipment**

  Tank systems may be fitted with multiple types of overfill prevention equipment that are not always compatible with each other – automatic shutoff valves may be used with high-level alarms but not ball float valves. Ball float valves are typically set to activate when the tank is 90% full, well before the automatic shutoff valve (which is typically set to 95%); the closing of the ball float valve reduces the flow rate into the tank, which in turn prevents the (full) closing of the automatic shutoff valve. This may lead to an overfill larger than the capacity of the spill bucket.

- **Tampering with the Automatic Shutoff Valve**

  Automatic shutoff valves are sometimes obstructed, often to deliver more petroleum than the tank's working capacity (i.e., "topping off" a tank). Operators must ensure that no such obstruction (e.g., gauging sticks holding the fill valve open) exists because it renders the shutoff valve nonfunctional, which is a serious violation.

High-Level Alarm (HLA)

High-level alarms primarily consist of an electronically monitored float – also known as a magnetostrictive probe, and often (though not always) tied to a tank gauging system – which activates an alarm to alert the person responsible for the transfer when to stop filling. (The alarm must be audible and/or visible from every tank fill port during typical working and weather conditions.)

HLAs must be set to the appropriate actuation height, in accordance with one of the following:

- The working capacity is set to 90% of the tank design capacity.
    - HLAs are often set to meet this out of convenience: a 10% ullage (i.e., the volume of empty space within the tank) is easier to calculate and often already accounts for the fittings.
- The HLA activates one minute prior to overfilling (so none of the fittings at the top of the tank are exposed to the stored petroleum).
    - HLAs are set up to meet this only when the tank is either:
        - too big, such that the unused 10% of the design capacity would be a considerable storage volume; or
        - too small, such that a 10% ullage does not prevent wetting of the fittings.

The type of deliveries made to the tank should also be considered for the chosen working capacity:

- Low flowrates (i.e., gravity head deliveries) mean more control over the delivery, allowing for a higher working capacity.
- High flowrates (i.e., pressurized deliveries) mean less control over the delivery, necessitating a lower working capacity.

HLAs, by themselves, are not capable of automatically stopping or restricting flow: as such, a high-level alarm may be paired with an automatic shutoff valve but must always activate well before the tank is full to give the person responsible for the transfer enough time to react appropriately.

High-level alarms must also be kept in good working order; to this end, the operability of HLAs – as an overfill prevention device – must be verified:

- at alarm installation/reinstallation; and
- within 30 days after alarm repair.

High-level alarms are also subject to walkthrough inspections[377].

Issues

- **Continuous Power to High-Level Alarms**

  High-level alarms require continuous power to work, especially when deliveries are made after normal operating hours (i.e., facility staff are not on site and/or have left for the day). High-level alarms should be plugged into a wall socket with a dedicated circuit breaker (separate from everything else) for this reason. Inspectors should verify continuous operability by reviewing the facility's inventory records for any overfills after hours (or deliveries that result in exceeding the tank's working capacity) – these may indicate that the high-level alarm is not operating continuously.

- **High-Level Alarms Without Test Buttons/Functions**

  High-level alarms must be visible and/or audible from all fill ports and be in good working condition. Inspectors should verify this by standing by the fill port and either looking for the high-level alarm, or having the operator manually test the alarm (i.e., hit the test button).

  However, not all HLAs are equipped with a button to test the operability of the alarm. Inspectors can assume that an alarm with no test function is operational and audible/visible from the fill port if there is no evidence of an overfill – at the fill port, in the inventory records, or in the spill history of the tank monitoring console (if so equipped).

- **Vent Whistles as High-Level Alarms**

  Vent whistles cannot be used as high-level alarms – to satisfy overfill prevention requirements – as they do not trigger an alarm to signify when the transfer must stop. Vent whistles are also not very reliable, as their efficiency largely depends on site conditions and the hearing of the person responsible for the transfer.

- **High-Level Alarms as Alternatives to Secondary Containment**

  High-level alarms are not acceptable alternatives to secondary containment because they do not provide a positive shutdown to prevent releases – in this case, overfills – from occurring.

Level Gauge

Level gauges are physical, mechanical, or electronic devices that accurately show (at every tank fill port) the level/volume of petroleum over the full height of the tank. Multiple types exist, including:

- *Float-actuated devices* – Level readings are based on a float on the surface of the stored petroleum.
- *Displacer devices* – A partially submerged, buoyant element is attached to an elastic element whose distortion/motion is translated to a level readout.
- *Hydrostatic head sensors* – Sensors at the bottom of the tank measure the weight of the overlying petroleum, which is then multiplied by the petroleum's density (at a given temperature) to get the total volume inside the tank.
- *Capacitance sensors* – The electrical capacitance between two electrodes inside the tank is related to the volume of product within.
- *Ultrasonic level monitors* – Monitors (mounted on the underside of the tank top) bounce sound waves off the surface of the product to measure the ullage of the tank. The volume of petroleum inside the tank is equal to the difference between the design capacity and the ullage.
- *Optical devices* – A light pulse is transmitted (from the underside of the tank top) to determine the depth of the petroleum within the tank.
- *Thermal conductivity sensors* – A device senses the difference in thermal conductivity between petroleum and air, to determine where ullage and the stored petroleum meet.

The person responsible for the transfer should stop when the tank is 90% full, or at least one minute before the tank is completely full. Deviations from the 90% criterion are appropriate only when the ullage (i.e., empty space in the tank) is either: too big (such that the unused 10% would be a considerable storage volume); or too small (such that a 10% ullage is too small to avoid wetting the fittings at the top of the tank).

The type of deliveries made to the tank should also be considered for the chosen working capacity:

- Low flowrates (i.e., gravity head deliveries) mean more control over the delivery, allowing for a higher working capacity.
- High flowrates (i.e., pressurized deliveries) mean less control over the delivery, necessitating a lower working capacity.

Level gauges are also subject to walkthrough inspections[377].

Issues

- **Using Sight Glasses as Level Gauges**

  Sight glasses are equivalent to level gauges, but their use is not recommended to meet overfill prevention requirements.

  - Sight glasses may not be readable from the fill port when the tank is past a certain capacity/height (such that the person responsible for the transfer can readily identify the petroleum level over the tank's entire height and stop the transfer before an overfill occurs).
  - Sight glasses built with glass or plastic rarely feature a valve to shut them off from the tank: a leak/release could occur when the sight glass is struck or melts during a fire.

- **Using Tank Monitoring Consoles as Level Gauges**

  Tank monitoring consoles are acceptable forms of level gauges, as long as the console has the appropriate probes/sensors attached, is properly calibrated, and is accessible (from the fill port) to the person responsible for the transfer as the transfer occurs.

- **Level Gauges as Alternatives to Secondary Containment**

  Traditional level gauges are not acceptable alternatives to secondary containment because they do not provide a positive shutdown to prevent releases – in this case, overfills – from occurring.

Valves

Purpose

Valves control the flow of petroleum through piping[379]: this flow can be stopped or diverted to avoid spills in case of equipment failure or user error.

Requirements

Tank systems must be equipped with the following valves (as necessary) and meet applicable requirements[380].

SP4 Valves	Cat. 1 Valve	Cat. 2 Valve	Cat. 3 Valve
Shear Valve	• *Required for:* Remote dispensers (i.e., not tank-mounted) for motor fuel, connected to pressurized piping • *Able to:* Automatically prevent flow of petroleum through the pipe, in the event of a fire or impact (to the dispenser) • *Located:* At grade, at the base/inlet of the dispenser *Note:* shear valves with a slip-joint feature cannot be used to meet regulatory requirements.		
	Designed and Installed: In accordance with: • the manufacturer's instructions (and an acceptable code of practice[381]); and • NFPA 30A (1984), section 4-3.6		*Designed and Installed:* In accordance with: • the manufacturer's instructions (and an acceptable code of practice[381]); and • NFPA 30A (2012), section 6.3.9
Solenoid/ Anti-Siphon Valve	• *Required for:* Pressurized piping, suction piping, etc., and dispensers, for motor fuel, at an elevation below the top of the tank • *Able to:* Prevent flow of petroleum by gravity, in the event of pipe or dispenser/hose failure • *Located:* Adjacent to and downstream of the operating valve		
	Designed and Installed: In accordance with: • the manufacturer's instructions (and an acceptable code of practice[381]); and • NFPA 30A (1984), section 2-1.7		*Designed and Installed:* In accordance with: • the manufacturer's instructions (and an acceptable code of practice[381]); and • NFPA 30A (2012), section 4.2.4

Check Valve	• *Required for:* Remote fill/delivery piping used for pressurized deliveries and associated with tanks:
	  ○ that have both a remote fill and a tank-top fill; or
	  ○ where petroleum levels in the tank are at a higher elevation than the remote fill port
	• *Able to:* Prevent backflow – spills/overfills – through the fill pipe during delivery/transfer (when possible)
	• *Installed:* In accordance with the manufacturer's instructions (and an acceptable code of practice[381])		

Operating Valve	• *Required for:* Tank-piping connections (i.e., not vent piping: delivery piping, pressurized piping, suction piping, etc.):
	  ○ through which petroleum can normally flow; and
	  ○ that have the potential to drain the tank by gravity
	• *Able to:* Prevent flow of petroleum by gravity, in the event of:
	  ○ pipe or dispenser/hose failure; or
	  ○ repairs to/replacement of any solenoid/anti-siphon valves immediately downstream of the operating valve
	• *Located:* As close to the tank connection as practicable, and immediately upstream of any solenoid/anti-siphon valves
	• *Installed:* In accordance with the manufacturer's instructions (and an acceptable code of practice[381])		

[379] This section does not cover valves used for overfill prevention. See **Overfill Prevention** on p. 350.
[380] Valve requirements for SP4 tank systems are found in 6 NYCRR paragraph 613-4.1(b)(6).
[381] See **Installation** on p. 294.

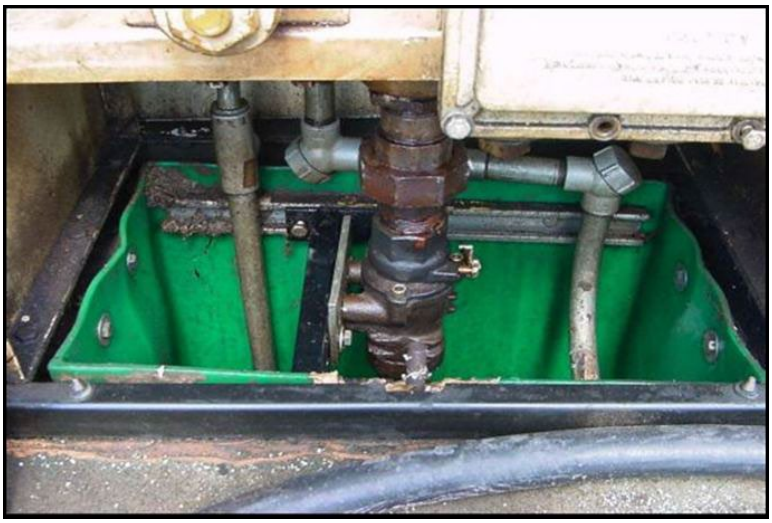
Questions

VL_pre	*Is the required equipment present?*
Y	» No issues were found under this question.
NS	» *613-4.1(b)(6)(i):* There is no shear valve installed beneath the dispenser. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must install (and submit documentation of) a shear valve.
XPS	» A shear valve is not required because the dispenser is not tied to either pressurized piping or a tank storing motor fuel.
NA	» *613-4.1(b)(6)(ii):* The piping/dispenser is not equipped with the required solenoid valve/anti-siphon valve. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must install (and submit documentation of) a solenoid valve/anti-siphon valve.
XPA	» A solenoid valve/anti-siphon valve is not required because the tank either is not storing motor fuel or does not cause a gravity head on the dispenser.
NC	» *613-4.1(b)(6)(iii):* The (remote) fill pipe is not equipped with the required check valve. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must install (and submit documentation of) a check valve.
XPC	» A check valve is not required because the tank does not have any remote fill ports, the tank does not receive pressurized deliveries, or the fill port is at a higher elevation than petroleum levels in the tank.
NO	» *613-4.1(b)(6)(iv):* The piping is not equipped with the required operating valve. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must install (and submit documentation of) an operating valve.
XPO	» An operating valve is not required because there is no piping through which the tank can be siphoned/drained by gravity.

VL_gwo	*Is the equipment in good working order?*
Y	» No issues were found under this question.
SIN	» *613-4.1(b)(6)(i):* The shear valve was not properly installed. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must correct (and submit documentation for) the shear valve installation.
SO	» *613-1.12 / 4.1(b)(6)(i):* The shear valve is inoperable or would not activate if the dispenser were dislodged from the base. » *Note(s):* Note that improper installation may also render the valve inoperable, but should instead be captured in Response **SIN**. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must repair or replace (and submit repair/replacement documentation for) the shear valve.
NXS	» *613-1.4(b):* The shear valve could not be accessed for inspection (e.g., locked/jammed dispenser, dispenser not designed to be accessed). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must submit documentation that the shear valve is present and in good working order/properly installed. » *Additional Action(s):* The inspector should conduct a follow-up inspection (where possible) to observe the shear valve rather than rely on installation documentation or photographs from the facility.
ADO	» *613-4.1(b)(6)(ii):* The solenoid valve/anti-siphon valve was not installed adjacent to and downstream of the operating valve. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must install the solenoid valve/anti-siphon valve in the correct location and submit a photograph showing the relocated valve.
AO	» *613-1.12 / 4.1(b)(6)(ii):* The solenoid valve/anti-siphon valve is inoperable. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must repair or replace (and submit repair/replacement documentation for) the solenoid valve/anti-siphon valve.
CO	» *613-1.12 / 4.1(b)(6)(iii):* The backflow check valve is inoperable. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must repair or replace (and submit repair/replacement documentation for) the check valve.
OO	» *613-1.12 / 4.1(b)(6)(iv):* The operating valve is inoperable. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must repair or replace (and submit repair/replacement documentation for) the operating valve.

Valve Types

Shear Valve



Shear valves are (typically) mechanical valves attached to pressurized piping beneath a dispenser and anchored to a metal armature within the under-dispenser containment. These valves are designed to automatically stop the flow of motor fuel should the dispenser become dislodged from its base (commonly due to vehicular collisions with the dispenser).

The valve has a shear point/plane – the weakest point in the valve, which must be set at the right height (i.e., at grade) – and at least one internal, spring-loaded poppet held open by a fusible link (i.e., a metal or plastic truss designed to fail under specific conditions). Shear valves break at the shear point when dispensers become dislodged, and the fusible link either breaks or melts (if a fire occurs), allowing the poppet to close and stopping the petroleum from flowing out of the now-exposed piping.

Issues

- **Proper Shear Valve Installation**

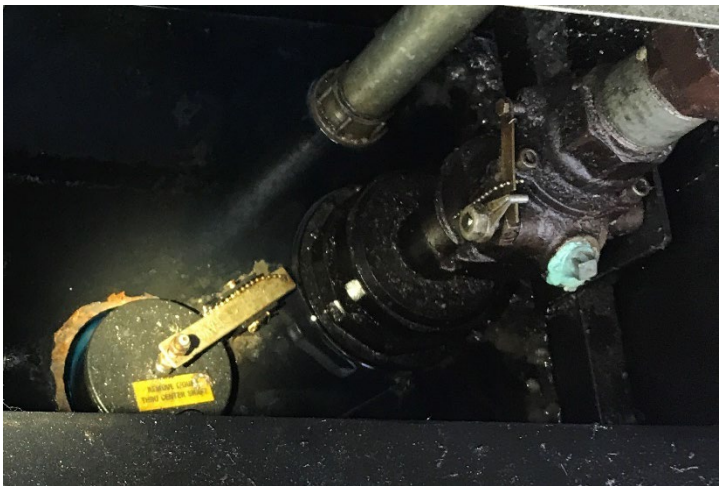
  A common issue with shear valves is incorrect installation. Bolts must anchor the shear valve at the shear point itself such that the shear point is at-grade; this allows the shear valve to activate properly when the dispenser is dislodged. Inspectors should look for any signs of improper installation, such as missing or loose bolts, corroded/damaged supports, and shear valves set higher or lower than grade level.

- **Tampered-With/Disabled Shear Valves**

  Shear valves may at times be tampered with or disabled (due to the cost of replacing it) such that the valve is permanently open, thereby defeating the purpose of the shear valve. Inspectors should look for tools (e.g., socket wrenches, screwdrivers, etc.), wire, or other miscellaneous items attached to the shear valve (where the fusible link would be) and holding the valve open. Shear valves that are missing the fusible link, have been tampered with, or are otherwise disabled must be either repaired or replaced.

- **Shear Valves Associated with Mechanical Float Devices**

  The fusible link holding open the shear valve poppet may sometimes be linked to a mechanical float device located within the under-dispenser containment. The float device will trip the shear valve when liquids are present in the dispenser sump. (Image to the right depicts a shear valve that was tripped by the mechanical float device.)



Solenoid/Anti-Siphon Valve

Solenoid and anti-siphon valves are two types of valves that automatically block the flow of motor fuel when the dispenser is not in use. Such valves are required on dispensing piping (often suction piping) where the petroleum level (in the tank) is normally higher than the dispenser: should either the piping or the dispenser fail, the tank will empty its contents by gravity without these valves.

These valves accomplish the same result but work and are constructed differently.

- Solenoid valves are electrically actuated valves, requiring both power and an electrical signal from the dispenser (i.e., the hook signal) to activate – solenoid valves are normally closed, but open when receiving current/electrical power.
- Anti-siphon valves are hydraulically activated devices that require enough of a vacuum downstream of the valve (e.g., vacuum from a suction pump) to overcome the spring holding the valve closed.

Solenoid and anti-siphon valves are often used in conjunction with operating valves (as required for all piping connected to tanks that could potentially be drained by gravity); these valves must always be installed immediately upstream of any solenoid/anti-siphon valves to provide a manual way of shutting off flow when the solenoid/anti-siphon valve needs to be repaired/replaced. Conversely, any ALLD fitted to the same pressurized piping must be downstream of the solenoid/anti-siphon valve, so the ALLD is not obstructed in detecting leaks.

Issues

- **Solenoid/Anti-Siphon Valve Placement Relative to the Operating Valve**

  Certain solenoid/anti-siphon valves are designed for placement at the highest point of the piping, often supplanting the operating valve. Such valves can only be used if the operating valve is still placed upstream of the solenoid/anti-siphon valve: the flow of petroleum through the solenoid/anti-siphon valve must be stopped before performing repairs/maintenance to avoid spills.

Check Valve

Check valves are designed to ensure that petroleum flows only in one direction and automatically prevent backflow (i.e., spills/overfills) without direct human intervention. These are required for all remote fill pipes where backflow is expected, especially those for tanks that receive pressurized deliveries and either:

- feature both a remote fill and a tank-top fill; or
- have petroleum levels at a higher elevation than the remote fill port (e.g., marina facilities).

Issues

- **Equivalent Devices for Check Valves**

  There are limited situations where the (remote) fill pipe is also used to draw petroleum from the tank, for which a check valve may not be appropriate; for such setups, a readily accessible (or remotely operable) operating valve may be used in lieu of the check valve.

Operating Valve

Operating valves – also known as block valves – allow for manual flow control. These are typically hand-operated mechanical valves (e.g., ball valves), though electronic variants do exist.

These are required on all piping from which the tank may be drained by gravity should a leak occur; as such, they are often used in conjunction with solenoid/anti-siphon valves on dispensing piping. Operating valves must always be installed as close as practicable to the tank connection AND immediately upstream of any solenoid/anti-siphon valves on such lines – this provides a manual way of shutting off flow when the solenoid/anti-siphon valve needs to be repaired/replaced.

Subpart 5
Hydrant Systems
(AST Systems and UST Systems)

Out-of-Service (OOS) Status and Permanent Closure

Purpose

Out-of-service requirements outline the steps that must be taken to avoid – or at least reduce – unnecessary deliveries, human error, and the resulting spills/releases from tank systems that are not in use, as well as prepare these tank systems for permanent closure if not returned to service. Similarly, permanent closure requirements establish procedures to safely inactivate tank systems, thereby minimizing the risk of (and addressing any) spills/releases that can occur – or are discovered – as they exit the PBS program. Both requirements also reduce the chances of tank abandonment and future environmental/fire safety concerns associated with the tank system.

Requirements

The out-of-service/permanent closure requirements[382] for SP5 tank systems are affected by the modular nature of hydrant systems and the overlapping authorities afforded to DEC regarding their regulation of AST systems and UST systems. In general, aboveground tanks that are part of a SP5 UST system, as well as underground tanks that are part of a SP5 AST system, are subject to a different Subpart/set of OOS/closure requirements than those normally applicable to the tank system as a whole:

OOS and Permanent Closure	***SP5 UST Systems***	***SP5 AST Systems***
Requirements Generally Applicable to the Tank System	6 NYCRR section 613-**2.6**	6 NYCRR section 613-**4.5**
Exceptions	*Aboveground tanks that are part of SP5 UST systems:* 6 NYCRR section 613-**4.5**	*Underground tanks that are part of SP5 AST systems:* 6 NYCRR section 613-**3.5**

The corresponding OOS/closure sections for the other Subparts will have more information regarding specific requirements and common issues:

- SP2: p. 40
- SP3: p. 197
- SP4: p. 284

Questions

OC_rc	***What's the tank system's status?***
OC_ri	***Is the registered tank status accurate?*** ***Note: if the tank is actually closed/out of the PBS program, note the closure date in Tank System Information.***
Y	» No issues were found under this question.
IN	» *613-1.9(a)(4):* The registered tank status is inaccurate. » *Note(s):* This Response does not include expired facility registrations, inaccurate facility information, unregistered tanks, or unregistered facilities; such violations should be captured under Question **REG_info**. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must correct the site registration online to reflect the tank's status. » *Additional Action(s):* The inspector should note the specific inaccuracy with the tank status under Question **OC_rc**, to include it in the list of registration discrepancies (in the NOV) that need to be corrected.

[382] Out-of-service and permanent closure requirements for SP5 hydrant systems are found in 6 NYCRR section 613-5.6.

OC_oos	*Is the OOS tank following all pertinent requirements?* ***Note: AST systems can be OOS beyond 12 months if at a facility with at least one other in-service tank system.***
Y	» No issues were found under this question.
MT	» *613-2.6(a)(3)(i) / 3.5(a)(3)(i) / 4.5(a)(3)(i) / 5.6(a) / 5.6(b):* The tank system has been out of service for more than 90 days, but the tank has not been emptied. » *Note(s):* The tank is considered empty when it has no more than 2.5 cm (1 in) of residue. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must empty the tank and submit documentation that the tank has been emptied.
VL	» *613-2.6(a)(3)(ii) / 3.5(a)(3)(ii) / 4.5(a)(3)(ii) / 5.6(a) / 5.6(b):* The tank system has been out of service for more than 90 days, but the vent lines have been closed prematurely. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must open the vent lines and submit a photograph showing the open vent lines.
PCS	» *613-2.6(a)(3)(iii) / 3.5(a)(3)(iii) / 4.5(a)(3)(iii) / 5.6(a) / 5.6(b):* The tank system has been out of service for more than 90 days, but the piping/ancillary equipment/ports/manways have not yet been capped/secured. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must cap/secure the piping/ancillary equipment/ports/manways and submit a photograph showing the capped/secured equipment.
12M	» *613-2.6(a)(4) / 3.5(a)(4) / 4.5(a)(4) / 5.6(a) / 5.6(b):* The tank system has been out of service for more than 12 months but has not yet been permanently closed. » *Note(s):* Out-of-service AST systems can continue to be (legally) OOS for more than 12 months if there is at least one in-service tank system – UST or AST – at the facility. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to permanently close the tank system (in accordance with an appropriate code of practice) within 60 days after the date of the NOV. In addition, the facility must submit a work plan for a site assessment for the SP2/SP5 UST system within 30 calendar days after the date of the NOV, and submit the resultant report within 90 calendar days after the date of the NOV.

OC_pc	*Did the permanently closed tank undergo proper closure?*
Y	» No issues were found under this question.
PRN	» *613-2.6(b)(1) / 3.5(b)(1) / 4.5(b)(1) / 5.6(a) / 5.6(b):* A pre-work notification was not submitted to the DEC at least 30 days prior to permanent closure of the tank system. » *Note(s):* Failure to notify the DEC prior to closure is a violation without a (direct) curative measure; however, it should still be treated as a separate/distinct violation from not keeping registration information current and accurate (Question **REG_info**, Response **IN**). » *Curative Measure(s):* If the site registration has yet to be updated, within 7 calendar days after the date of the NOV, the facility must correct the site registration online (to reflect the date of closure) and – if necessary – submit the closure report detailing that the tank system underwent proper closure in accordance with an appropriate code of practice, as well as the site assessment report (for SP2/SP5 UST systems).
IM	» *613-2.6(b)(5)(i) – (iii) / 3.5(b)(4)(i) – (iii) / 4.5(b)(4)(i) – (iii) / 5.6(a) / 5.6(b):* The tank system did not undergo proper permanent closure (in accordance with an appropriate code of practice). » *Note(s):* The closure report is the primary evidence that the tank system underwent proper permanent closure; if the closure was performed properly, but either a copy of the closure report was not submitted to the DEC within 30 days after closure, or the closure report is not being retained for at least three years after tank system closure or until the facility has been permanently closed (whichever is later), Response **NR** or **NSC** under Question **OC_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to permanently close the tank system (in accordance with an appropriate code of practice) or be brought into compliance with all requirements of the PBS regulations, within 60 days after the date of the NOV. » *Additional Action(s):* A tank that was removed improperly may require further action (i.e., perform a site assessment) to ensure that the surrounding environment was not negatively impacted.
SA ***[SP2/SP5]***	» *613-2.6(b)(3) / 5.6(a):* A site assessment was not performed for the UST system during permanent closure. » *Note(s):* The site assessment report is the primary evidence that the assessment was performed (properly) at the time of permanent closure; if the assessment was performed (properly), but either a copy of the site assessment report was not submitted to the DEC within 90 days after closure, or the site assessment report is not being retained for at least three years after tank system closure or until the facility has been permanently closed (whichever is later), Response **NR** or **NSA** under Question **OC_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a work plan for a site assessment for the tank system, and submit the resultant report within 90 calendar days after the date of the NOV.
XPS ***[SP2/SP5]***	» A site assessment is not required because the tank system had vapor/groundwater monitoring (as a leak detection method), and no releases were detected by said LD method.

OC_rec	Are the closure records being retained? Note: records must be retained for 3 years after permanent closure or until the facility has been permanently closed, whichever is later.
Y	» No issues were found under this question.
NR	» *613-2.6(e) / 3.5(d) / 4.5(c) / 5.6(a) / 5.6(b):* The closure records (i.e., the closure report and/or the site assessment report) are not being retained for at least three years after tank system closure or until the facility has been permanently closed (whichever is later). » *Note(s):* Closure records are the primary evidence that the tank system underwent proper permanent closure (and/or a site assessment was performed properly for the SP2/SP5 UST at the time of closure); if the records cannot be produced AND copies were not submitted to the DEC in a timely fashion, the tank system likely did not undergo proper closure and/or a site assessment was likely not performed (and Response **IM**/**SA** under Question **OC_pc** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit the missing closure records. » *Additional Action(s):* The inspector may provide a copy of the missing records to the facility if the copies were previously sent to DEC and the facility does not have their own copy.
NSC	» *613-2.6(e)(1) / 3.5(d) / 4.5(c) / 5.6(a) / 5.6(b):* A copy of the closure report was not submitted to the DEC within 30 days after permanent closure of the tank system. » *Note(s):* The closure report is the primary evidence that the tank underwent proper permanent closure; if the report cannot be produced AND a copy was not submitted to the DEC within 30 days after closure, the tank likely did not undergo proper closure (and Response **IM** under Question **OC_pc** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit documentation proving that the tank system underwent proper closure (in accordance with an appropriate code of practice).
NSA [SP2/SP5]	» *613-2.6(b)(3) / 2.6(e)(2) / 5.6(a):* A copy of the site assessment report (for the UST system) was not submitted to the DEC within 90 days after permanent closure of the UST system. » *Note(s):* The site assessment report is the primary evidence that a site assessment was performed (properly) at the time of closure; if the report cannot be produced AND a copy was not submitted to the DEC within 90 days after closure, a site assessment was likely not performed (and Response **SA** under Question **OC_pc** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the site assessment report, or submit a work plan for a site assessment for the tank system and submit the resultant report within 90 calendar days after the date of the NOV.
OC_com	**Was the site assessment complete/adequate?**
Y	» No issues were found under this question.
IN [SP2/SP5]	» *613-2.6(c)(1) / 5.6(a):* The site assessment performed for the UST system was not adequate (e.g., did not test for all applicable compounds, location/number of samples not satisfactory). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a site assessment that addresses all inadequacies.

Tank System: Design/Construction & Compatibility, Installation, Repair

Purpose

Tank systems must be designed, constructed, and installed to meet certain standards/codes of practice, to ensure that they can safely store petroleum. And when tank system components inevitably fail – despite proper construction/installation and timely upkeep – the equipment must be repaired or replaced accordingly to return it to proper working condition before being brought back into service. These actions help reduce the likelihood of future spills/releases from the tank system.

Requirements

The requirements for SP5 tank systems are affected by the modular nature of hydrant systems and the overlapping authorities afforded to DEC regarding their regulation of AST systems and UST systems.

Design, Construction, and Compatibility

In general, aboveground tanks that are part of a SP5 UST system, as well as underground tanks that are part of a SP5 AST system, are subject to a different Subpart/set of design/construction requirements[383] than those normally applicable to the tank system as a whole:

Design and Construction	***SP5 UST Systems***	***SP5 AST Systems***
Requirements Generally Applicable to the Tank System	*Tanks:* 6 NYCRR paragraph 613-**2.1(b)(1)** *Piping:* 6 NYCRR paragraph 613-**2.1(b)(2)**	*Tanks:* 6 NYCRR paragraph 613-**4.1(b)(1)** *Piping:* 6 NYCRR paragraph 613-**4.1(b)(2)**
Exceptions	*Field-constructed tanks with a design capacity greater than 50k gallons and associated piping, that are part of SP5 UST systems:* 6 NYCRR paragraphs 613-**2.1(c)(1), (2)** *Aboveground tanks that are part of SP5 UST systems:* 6 NYCRR paragraph 613-**4.1(b)(1)**	*Piping associated with field-constructed tanks with a design capacity greater than 50k gallons, that are part of SP5 AST systems:* 6 NYCRR paragraph 613-**4.1(c)(2)** *Underground tanks that are part of SP5 AST systems:* 6 NYCRR paragraph 613-**3.1(b)(1)**

The corresponding design/construction sections for the other Subparts will have more information regarding specific requirements and common issues:

- SP2: p. 48
- SP3: p. 203
- SP4: p. 290

SP5 tank systems must be proven to meet the required design/construction standards and be compatible[384] with the petroleum type being (or to be) stored in the system. For tank systems storing biofuel blends[385] that are either more than 10% ethanol (>E10), or more than 20% biodiesel (>B20), one of the following compatibility records must be maintained until the tank system undergoes permanent closure:

- Certification or listing of the tank system equipment by a nationally recognized, independent testing laboratory for use with the stored biofuel blend
- Equipment manufacturer's approval in writing, indicating an affirmative statement of compatibility and specifying the range of biofuel blends with which the tank system equipment is compatible

[383] Design/construction requirements for SP5 hydrant systems are found in 6 NYCRR paragraphs 613-5.1(b)(1), (2).
[384] Compatibility requirements for SP5 tank systems are found in 6 NYCRR paragraph 613-5.1(b)(7) and subdivision 5.2(c). Facilities must have these records when the tank system starts storing petroleum blends higher than E10/B20.
[385] Biofuel blends are identified by the blend's ethanol or biodiesel content by volume.

Inspectors may request design/construction and/or compatibility documentation from the facility when they have doubts about the construction of a particular tank system equipment; tank systems for which these records cannot be produced or which cannot be proven to meet the required construction/design standards, must either be repaired/retrofitted to meet these requirements, or be closed[386].

Installation

Installation requirements are similarly affected by hydrant systems' modular nature: in general, aboveground tanks that are part of a SP5 UST system, as well as underground tanks that are part of a SP5 AST system, are subject to a different Subpart/set of installation requirements[387] than those normally applicable to the tank system as a whole:

Installation	***SP5 UST Systems***	***SP5 AST Systems***
Requirements Generally Applicable to the Tank System	6 NYCRR subdivision 613-**2.2(a)**	6 NYCRR subdivision 613-**4.2(a)**
Exceptions	*Aboveground tanks that are part of SP5 UST systems:* 6 NYCRR subdivision 613-**4.2(a)**	*Underground tanks that are part of SP5 AST systems:* 6 NYCRR subdivision 613-**3.2(a)**

The corresponding installation sections for the other Subparts will have more information regarding specific requirements and common issues:

- SP2: p. 52
- SP3: p. 206
- SP4: p. 294

Repairs

Repair requirements are also similarly affected by hydrant systems being modular: in general, aboveground tanks that are part of a SP5 UST system, as well as underground tanks that are part of a SP5 AST system, are subject to a different Subpart/set of repair requirements[388] than those normally applicable to the tank system as a whole:

Repairs	***SP5 UST Systems***	***SP5 AST Systems***
Requirements Generally Applicable to the Tank System	6 NYCRR subdivision 613-**2.2(j)**	6 NYCRR subdivision 613-**4.2(j)**
Exceptions	*Aboveground tanks that are part of SP5 UST systems:* 6 NYCRR subdivision 613-**4.2(j)**	*Underground tanks that are part of SP5 AST systems:* 6 NYCRR subdivision 613-**3.2(j)**

The corresponding repairs sections for the other Subparts will have more information regarding specific requirements and common issues:

- SP2: p. 53
- SP3: p. 206
- SP4: p. 295

[386] Tank closure must be performed in accordance with 6 NYCRR subdivisions 613-5.6(b & c).
[387] Installation requirements for SP5 hydrant systems are found in 6 NYCRR paragraph 613-5.2(a).
[388] Repair requirements for SP5 hydrant systems are found in 6 NYCRR paragraph 613-5.2(j).

Questions

TS_cs	***Does the tank system meet pertinent construction standards?***
Y	» No issues were found under this question.
TC	» *613-2.1(b)(1)(i) / 2.1(b)(1)(ii) / 2.1(b)(1)(iii) / 3.1(b)(1)(ii) / 3.1(b)(1)(iii) / 4.1(b)(1)(ii) / 4.1(b)(1)(iii) / 5.1(b)(1)(i) / 5.1(b)(1)(ii):* The tank does not meet applicable design/construction requirements. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to permanently close the tank system within 60 days after the date of the NOV.
XTT [SP3/SP4/SP5]	» Meeting design/construction standards is not required because the tank is: a SP3/SP5, Cat. 1 UST; a SP4/SP5, Cat. 1 AST; or a SP4/SP5, Cat. 2/3 AST with a design capacity less than 60 gallons.
PC	» *613-2.1(b)(2)(i) / 2.1(b)(2)(ii) / 2.1(b)(2)(iii) / 3.1(b)(2)(ii) / 3.1(b)(2)(iii) / 4.1(b)(2)(ii) / 4.1(b)(2)(iii) / 5.1(b)(2)(i) / 5.1(b)(2)(ii):* The piping does not meet applicable design/construction requirements. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to either replace the piping or permanently close the tank system, within 60 days after the date of the NOV.
XTP [SP3/SP4/SP5]	» Meeting design/construction standards is not required because the piping is Cat. 1 piping associated with either a SP3/SP5 UST system or a SP4/SP5 AST system.
TS_bf	***Is the entire tank system compatible with the stored petroleum?***
Y	» No issues were found under this question.
CI	» *613-2.1(b)(7) / 3.1(b)(7) / 4.1(b)(7) / 5.1(b)(7):* The tank system is not compatible with the stored petroleum. » *Note(s):* Compatibility documentation is the primary evidence that the tank system is compatible with biofuel blends greater than E10/B20; if a tank system component is compatible, but documentation is not being retained at least until tank system closure, Response **NR** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to permanently close the tank system within 60 days after the date of the NOV.
NR	» *613-2.2(c)(2) / 3.2(c)(2) / 4.2(c)(2) / 5.2(c)(2):* Compatibility documentation is not being retained for one or more tank system components, at least until the tank system (storing biofuel blends greater than E10/B20) is permanently closed. » *Note(s):* Compatibility documentation is the primary evidence that the tank system is compatible with biofuel blends greater than E10/B20; if the documentation is missing, the tank system component is likely not compatible (and Response **CI** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either: obtain (and submit) the compatibility documentation; submit a plan to replace the incompatible component(s) with compatible equipment within 90 calendar days after the date of the NOV; or submit a plan to permanently close the tank system within 60 days after the date of the NOV.
XP	» Compatibility documentation is not required because the tank system is not storing a biofuel blend greater than E10/B20.

TS_ir	***Are there installation records for the UST system?***
Y	» No issues were found under this question.
NSS ***[SP2/SP5]***	» *613-2.2(a)(3)(iii) / 5.2(a)(1):* The signed statement from the installer is not being kept, or the statement is not being retained (for all Cat. 3 UST system components) until the tank system is permanently closed. » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must obtain (and submit) a copy of the installer-signed statement.
NAD ***[SP2/SP5]***	» *613-2.2(a)(3)(iii) / 5.2(a)(1):* The document accompanying the signed statement from the installer is not being kept, or the document is not being retained until the tank system is permanently closed. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either obtain (and submit) a copy of the installer's certification from the component manufacturer or the (completed) manufacturer's installation checklist, or have a PE perform (and submit a copy of) an installation inspection.
XT ***[SP2/SP5]***	» Installation records not required because the UST system does not have any Cat. 3 components.
TS_rat	***If repairs were made, are the repairs appropriate/adequate, and was the equipment tested after the repair?***
Y	» No issues were found under this question.
IN	» *613-2.2(j)(3) – (8) / 3.2(j)(3) – (8) / 4.2(j)(3) – (7) / 5.2(j):* The repairs made to a tank system component were inappropriate/inadequate. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either: take the tank system out of service and submit a plan to properly repair the tank system component within 90 calendar days after the date of the NOV; or submit a plan to permanently close the tank system within 60 days after the date of the NOV.
NIT	» *613-2.2(j)(9) – (12) / 3.2(j)(9) – (10) / 4.2(j)(8) – (9) / 5.2(j):* An appropriate inspection/test was not performed for the tank system component after the repair. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a tightness test.
XP	» A tightness test is not required because either the tank system component is being monitored for leaks at least weekly, or the repaired tank was internally inspected following the repair.

Operator Training

Purpose

Operator Training is a program designed to prevent spills and releases by requiring facilities with SP5 UST systems to properly educate their staff on regulatory compliance, correct operation/maintenance of tank system equipment, and protocols to follow when components fail, and spills occur.

Requirements

The Operator Training requirements[389] for SP5 tank systems apply only to UST systems and are identical to those of SP2 UST systems. As such the Operator Training section for Subpart 2 will have more information regarding specific requirements and common issues (p. 59).

Questions

OT_d	***Are there authorized Class A/B Operator(s) and trained Class C Operator(s) designated for this tank?***
Y	» No issues were found under this question.
NDA [SP2/SP5]	» *613-2.5(a)(1) / 5.5:* The Class A Operator is authorized but has not been designated for the tank system. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must designate the Class A Operator by updating the site registration online.
NOA [SP2/SP5]	» *613-2.5(b)(1) / 5.5:* There is no authorized Class A Operator designated for the tank system, or the previously designated Class A Operator either no longer works for the facility or was deauthorized (and has not yet been reauthorized). » *Note(s):* Authorization certificates are the primary evidence that the Operator is authorized; if the Operator is authorized but their certificate is not being kept, Response **NDA** should be selected instead, along with Response **NRA** (under Question **OT_rec**). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must designate an authorized Class A Operator by updating the site registration online.
NDB [SP2/SP5]	» *613-2.5(a)(1) / 5.5:* The Class B Operator is authorized but has not been designated for the tank system. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must designate the Class B Operator by updating the site registration online.
NOB [SP2/SP5]	» *613-2.5(b)(2) / 5.5:* There is no authorized Class B Operator designated for the tank system, or the previously designated Class B Operator either no longer works for the facility or was deauthorized (and has not yet been reauthorized). » *Note(s):* Authorization certificates are the primary evidence that the Operator is authorized; if the Operator is authorized but their certificate is not being kept, Response **NDB** should be selected instead, along with Response **NRB** (under Question **OT_rec**). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must designate an authorized Class B Operator by updating the site registration online.
NOC [SP2/SP5]	» *613-2.5(a)(2) / 2.5(b)(3) / 5.5:* There is no trained Class C Operator designated for the tank system, or the previously designated Class C Operator no longer works for the facility. » *Note(s):* Training logs are the primary evidence that the Operator is trained; if the Operator is trained but their training log is not being kept, Response **NRC** (under Question **OT_rec**) should be selected instead. » *Curative Measure(s):* Within 10 calendar days after the date of the NOV, the facility must have a Class A or B Operator (familiar with the Class C Operator's site-specific responsibilities) train/designate a Class C Operator, and submit a copy of the training log.

[389] Operator Training requirements for SP5 hydrant systems are found in 6 NYCRR section 613-5.5.

OT_rec	***Are Operator Training records being retained?*** ***Note: records must be retained as long as the Operator is designated, PLUS 3 years after designation.***
Y	» No issues were found under this question.
NRA ***[SP2/SP5]***	» *613-2.5(e)(1) / 5.5:* The (current) Class A Operator's authorization certificate is not being kept, or the certificate is not being retained until three years after their designation (for any of the previous Class A Operators). » *Note(s):* Authorization certificates are the primary evidence that the Operator is authorized; if the certificate cannot be produced AND the Operator is not on DEC's Operator Training Database, the Operator is likely not authorized (and Response **NOA** under Question **OT_d** should be selected instead). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must submit the authorization certificates for all Class A Operators designated (for the tank system) in the last three years.
NRB ***[SP2/SP5]***	» *613-2.5(e)(1) / 5.5:* The (current) Class B Operator's authorization certificate is not being kept, or the certificate is not being retained until three years after their designation (for any of the previous Class B Operators). » *Note(s):* Authorization certificates are the primary evidence that the Operator is authorized; if the certificate cannot be produced AND the Operator is not on DEC's Operator Training Database, the Operator is likely not authorized (and Response **NOB** under Question **OT_d** should be selected instead). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must submit the authorization certificates for all Class B Operators designated (for the tank system) in the last three years.
NRC ***[SP2/SP5]***	» *613-2.5(e)(2) / 5.5:* The (current) Class C Operator's training log is not being kept, or the training log is not being retained until three years after their designation (for any of the previous Class C Operators). » *Note(s):* Training logs are the primary evidence that the Operator is trained; if the training log is missing, the Operator is likely not trained (and Response **NOC** under Question **OT_d** should be selected instead). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must submit the training logs for all Class C Operators designated (for the tank system) in the last three years.
OT_rt	***Are the Class A/B Operators being retested periodically?***
Y	» No issues were found under this question.
RTA ***[SP2/SP5]***	» *613-2.5(c)(4) / 5.5:* The Class A Operator has not been retested or is not being retested at least every five years. » *Note(s):* Class A Operators must be initially retested within the later of the following: two years after the effective date of the new PBS regulations, or five years after the date of the last valid Operator authorization certificate. Periodic retesting must occur every five years afterwards. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either have the Class A Operator undergo retesting or designate an authorized Class A Operator by updating the site registration online.
RTB ***[SP2/SP5]***	» *613-2.5(c)(4) / 5.5:* The Class B Operator has not been retested or is not being retested at least every five years. » *Note(s):* Class B Operators must be initially retested within the later of the following: two years after the effective date of the new PBS regulations, or five years after the date of the last valid Operator authorization certificate. Periodic retesting must occur every five years afterwards. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either have the Class B Operator undergo retesting or designate an authorized Class B Operator by updating the site registration online.

Walkthrough Inspections

Purpose

Walkthrough inspections are periodic rounds of the facility, designed to familiarize operators with their facility/equipment and make them aware of any issues that have occurred (or have yet to occur) with the tank system – this reduces the risk of equipment failure and spills/releases that follow. Operators performing site inspections are more likely to catch and address such issues (sooner) than those relying solely on alarms.

Requirements

The walkthrough inspection requirements[390] for SP5 tank systems are affected by the modular nature of hydrant systems and the overlapping authorities afforded to DEC regarding their regulation of AST systems and UST systems. In general, aboveground tanks that are part of a SP5 UST system, as well as underground tanks that are part of a SP5 AST system, are subject to a different Subpart/set of walkthrough inspection requirements than those normally applicable to the tank system as a whole:

Walkthrough Inspections	***SP5 UST Systems***	***SP5 AST Systems***
Requirements Generally Applicable to the Tank System	*Tank systems:* 6 NYCRR subdivision 613-**2.2(h)** *Hydrant pits and piping vaults:* 6 NYCRR subparagraph 613-**5.2(h)(1)(i)**	6 NYCRR subdivision 613-**4.2(h)**
Exceptions	*Aboveground tanks that are part of SP5 UST systems (and any associated AST leak detection equipment):* 6 NYCRR subdivision 613-**4.2(h)**	*Underground tanks that are part of SP5 AST systems:* No requirements specified

Walkthrough inspections for SP5 UST systems must also cover any hydrant pits and piping vaults: these inspections must be performed either every 30 days or annually (if confined space entry is required for inspection) and must consist of the following actions (as applicable).

SP5 UST System Component	***30-Day or Annual Walkthrough Inspections: Specific Requirements***
Hydrant Pits	• Pit must be visually checked for damage. ○ Any liquid[391] or debris within must be removed. • Pit must be checked for leaks.
Hydrant Piping Vaults	Piping vault must be checked for leaks.

The corresponding walkthrough inspection sections for the other Subparts will have more information regarding specific requirements and common issues:

- SP2: p. 64
- SP4: p. 301

[390] Walkthrough inspection requirements for SP5 tank systems are found in 6 NYCRR subdivision 613-5.2(h).
[391] Petroleum in the fill port catch basin or containment sump may still need to be reported to the Spill Hotline within two hours after discovery. See **Spills** on p. 460.

Questions

WT_itm	***Are the inspections being performed periodically?*** ***Note: 30-day (UST system) inspections may be performed less frequently (i.e., prior to every delivery) if deliveries are less frequent than every 30 days.***
Y	» No issues were found under this question.
N30U ***[SP2/SP5]***	» *613-2.2(h)(1)(i)(a) / 5.2(h)(1)(i):* 30-day inspections are not being performed for the UST system. » *Note(s):* Inspection records are the primary evidence that 30-day inspections are being performed; if inspections are being performed, but records are not being retained for at least three years, Response **NR30U** under Question **WT_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) a 30-day inspection.
P30U ***[SP2/SP5]***	» *613-2.2(h)(1)(i)(a) / 5.2(h)(1)(i):* 30-day inspections are not being performed for the UST system at least every 30 days. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) a 30-day inspection.
NA ***[SP2/SP5]***	» *613-2.2(h)(1)(i)(b) / 5.2(h)(1)(i):* Annual inspections are not being performed for the UST system. » *Note(s):* Inspection records are the primary evidence that annual inspections are being performed; if inspections are being performed, but records are not being retained for at least three years, Response **NRA** under Question **WT_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an annual inspection.
PA ***[SP2/SP5]***	» *613-2.2(h)(1)(i)(b) / 5.2(h)(1)(i):* Annual inspections are not being performed for the UST system at least annually. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an annual inspection.
N30A ***[SP4/SP5]***	» *613-4.2(h)(1) / 4.2(h)(3) / 5.2(h)(2):* 30-day inspections are not being performed for the AST system. » *Note(s):* Inspection records are the primary evidence that 30-day inspections are being performed; if inspections are being performed, but records are not being retained for at least three years, Response **NR30A** under Question **WT_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must take the AST system out of service and perform (and submit the records of) a 30-day inspection.
P30A ***[SP4/SP5]***	» *613-4.2(h)(1) / 4.2(h)(3) / 5.2(h)(2):* 30-day inspections are not being performed for the AST system at least every 30 days. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) a 30-day inspection.

WT_rec	***Are the inspection records being retained?*** ***Note: records must be retained for 3 years. 30-day (UST system) inspection records must include delivery records if inspections are performed less frequently than every 30 days.***
Y	» No issues were found under this question.
NR30U ***[SP2/SP5]***	» *613-2.2(h)(2) / 5.2(h)(1)(i):* 30-day inspections are not being recorded, or records are not being retained (for the UST system) for at least three years. » *Note(s):* A facility is considered in compliance if they have records for at least ten of the last 12 inspections. Inspection records are the primary evidence that 30-day inspections are being performed; if the records are missing, inspections are likely not being performed (and Response **N30U** under Question **WT_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records of the last 30-day inspection, or perform (and submit the records of) a 30-day inspection.
NRA ***[SP2/SP5]***	» *613-2.2(h)(2) / 5.2(h)(1)(i):* Annual inspections are not being recorded, or records are not being retained (for the UST system) for at least three years. » *Note(s):* Inspection records are the primary evidence that annual inspections are being performed; if the records are missing, inspections are likely not being performed (and Response **NA** under Question **WT_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records of the last annual inspection, or perform (and submit the records of) an annual inspection.
NR30A ***[SP4/SP5]***	» *613-4.2(h)(4) / 5.2(h)(2):* 30-day inspections are not being recorded, or records are not being retained (for the AST system) for at least three years. » *Note(s):* A facility is considered in compliance if they have records for at least ten of the last 12 inspections. Inspection records are the primary evidence that 30-day inspections are being performed; if the records are missing, inspections are likely not being performed (and Response **N30A** under Question **WT_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records of the last 30-day inspection, or perform (and submit the records of) a 30-day inspection.

WT_com	***Was the inspection complete/adequate?*** ***Note: while containment sumps and handheld LD equipment are to be covered under the annual inspections, certain facilities include them in the 30-day inspection to avoid having to create/use a separate form for the annual walkthrough inspection. In those cases, the annual walkthrough inspection requirement is satisfied, and ACS and AHH do not apply.***
Y	» No issues were found under this question.
30CB ***[SP2/SP5]***	» *613-2.2(h)(1)(i)(a)(1) / 5.2(h)(1)(i):* 30-day inspections do not include the fill port catch basin(s). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) a 30-day inspection and include the catch basin(s) in the inspection.
30LD ***[SP2/SP5]***	» *613-2.2(h)(1)(i)(a)(2) / 5.2(h)(1)(i):* 30-day inspections do not include the leak detection equipment. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) a 30-day inspection and include the leak detection equipment in the inspection.
30HV ***[SP5]***	» *613-5.2(h)(1)(i)(a) – (b):* 30-day inspection records do not include the hydrant pits and/or piping vaults. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) a 30-day inspection and include the hydrant pit(s)/piping vault(s) in the inspection.
30D ***[SP2/SP5]***	» *613-2.2(h)(2) / 5.2(h)(1)(i):* 30-day inspection records do not include the delivery records. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit the delivery records for the last 30 days.
COP ***[SP2/SP5]***	» *613-2.2(h)(1)(ii) / 5.2(h)(1)(i):* Walkthrough inspections were not performed to a code of practice (e.g., PEI RP900) in lieu of specified standards for 30-day/annual inspections. » *Note(s):* If a facility chooses to follow a code of practice, they must follow all specified requirements/recommendations even if they go above and beyond what is minimally required in the regulations. However, the facility may use a code of practice as a guide on how to conduct the minimum requirements of the monthly and annual walkthrough inspections set in the regulations (e.g., follow PEI RP900's instructions on how to check sumps for damage) without having to perform the more stringent procedure in the code of practice. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) either a code-of-practice inspection or both a 30-day and annual inspection.
ACS ***[SP2/SP5]***	» *613-2.2(h)(1)(i)(b)(1) / 5.2(h)(1)(i):* Annual inspections do not include the containment sump(s). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an annual inspection and include the containment sump(s) in the inspection.
AHH ***[SP2/SP5]***	» *613-2.2(h)(1)(i)(b)(2) / 5.2(h)(1)(i):* Annual inspections do not include the handheld leak detection equipment. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an annual inspection and include the (handheld) leak detection equipment in the inspection.
30EQ ***[SP4/SP5]***	» *613-4.2(h)(1) / 4.2(h)(2) / 5.2(h)(2):* 30-day inspections do not include all applicable AST system equipment. » *Note(s):* This Response includes any ASTs that aren't being monitored for leaks between the on-ground tank and the impermeable barrier. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) a complete 30-day inspection.
WT_30A	***What's missing from the 30-day (AST system) inspections?***

Leak Detection

Purpose

Leak detection allows facility staff to monitor tank system equipment for spills and any integrity issues and respond to them immediately to keep spills from growing. This in turn helps decrease the chances of those spills reaching the lands and/or waters of the State (and becoming releases).

Requirements

The leak detection requirements[392] for SP5 tank systems are affected by the modular nature of hydrant systems and the overlapping authorities afforded to DEC regarding their regulation of AST systems and UST systems. In general, aboveground tanks that are part of a SP5 UST system, as well as underground tanks that are part of a SP5 AST system, are subject to a different Subpart/set of leak detection requirements than those normally applicable to the tank system as a whole:

Leak Detection	***SP5 UST Systems***	***SP5 AST Systems***
Requirements Generally Applicable to the Tank System	6 NYCRR section 613-**2.3** *Connectivity and Operability Inspections for LD Equipment:* 6 NYCRR subdivision 613-**2.2(g)**	6 NYCRR section 613-**4.3**
Exceptions	*Aboveground tanks that are part of SP5 UST systems:* 6 NYCRR section 613-**4.3**	*Underground tanks that are part of SP5 AST systems:* 6 NYCRR section 613-**3.3** *Connectivity Inspections for LD Equipment (for underground tanks that are part of SP5 AST systems):* 6 NYCRR subdivision 613-**3.2(g)**

The corresponding LD sections for the other Subparts will have more information regarding specific requirements and common issues:

- SP2: p. 68
- SP3: p. 211
- SP4: p. 303

[392] Leak detection requirements for SP5 hydrant systems are found in 6 NYCRR section 613-5.3.

Questions

LD	***Leak Detection***
LD_trc	***Tank LD Methods: all LD methods that apply to the tank – including those required and any supplementary methods being performed – should be selected.***
INV	» Inventory Monitoring
MTG	» Manual Tank Gauging
ATG	» Automatic Tank Gauging
VGM	» Vapor/Groundwater Monitoring
INS	» Interstitial Monitoring
SIR	» Statistical Inventory Reconciliation
TTTF	» Tank Tightness Testing (FCTs)
ATGF	» Automatic Tank Gauging (FCTs)
VMTF	» Vapor Monitoring w/ Tracer (FCTs)
INCF	» Inventory Control (FCTs)
WHM	» Weep Hole Monitoring
TTT	» Tank Tightness Testing
IMP	» Impermeable Barrier/Double-Bottom Monitoring
INR	» Internal Tank Inspections
N	» *613-2.3(a)(1) / 3.3(a)(1) / 4.3(a)(1) / 5.3(a) / 5.3(b):* The tank is not being monitored for leaks. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid tank leak detection method.
XP	» Leak detection is not required because the tank system is OOS and the (associated) tank is currently empty.
XT [SP4/SP5]	» AST leak detection is not required because there are no corresponding LD requirements.
LD_tri	***Is the registered tank LD method(s) accurate?***
Y	» No issues were found under this question.
IN	» *613-1.9(a)(4):* The registered tank leak detection method(s) is inaccurate. » *Note(s):* This Response does not include expired facility registrations, inaccurate facility information, unregistered tanks, or unregistered facilities; such violations should be captured under Question **REG_info**. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must correct the site registration online to reflect the tank leak detection method(s). » *Additional Action(s):* The inspector should note the specific inaccuracy with the tank leak detection under Question **LD_tnov**, to include it in the list of registration discrepancies (in the NOV) that need to be corrected.
LD_tnov	***Which tank LD method(s) should be noted in the NOV?*** ***Note: two methods (maximum) should be selected to be on the registration.***

LD_prc	***Piping LD Methods: all LD methods that apply to the piping – including those required and any supplementary methods being performed – should be selected. Nothing should be selected if there is no piping associated with the tank.***
VGM	» Vapor/Groundwater Monitoring
INS	» Interstitial Monitoring
SIR	» Statistical Inventory Reconciliation
ALLD	» Automatic Line Leak Detector
LTT	» Line Tightness Testing
BTTF	» Bulk Piping Tightness Testing (FCTs)
VMTF	» Vapor Monitoring w/ Tracer (FCTs)
INCF	» Inventory Control (FCTs)
N	» 613-2.3(a)(1) / 3.3(a)(1) / 4.3(a)(1) / 5.3(a) / 5.3(b): The piping is not being monitored for leaks. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid piping leak detection method.
NLLD	» *613-2.3(b)(2)(i)(a)(1) / 2.3(b)(2)(i)(b)(1) / 2.3(b)(2)(i)(c) / 3.3(b)(2)(i)(a)(1) / 3.3(b)(2)(i)(b) / 3.3(b)(2)(i)(c) / 4.3(b)(2)(i)(a)(1) / 4.3(b)(2)(i)(b) / 4.3(b)(2)(i)(c) / 5.3(a) / 5.3(b):* The pressurized piping is not equipped with the required automatic line leak detector. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid ALLD.
XP	» Leak detection is not required because the tank system is OOS and the (associated) tank is currently empty.
XT	» Piping leak detection is not required because there are no corresponding LD requirements.
LD_pri	***Is the registered piping LD method(s) accurate?***
Y	» No issues were found under this question.
IN	» *613-1.9(a)(4):* The registered piping leak detection method(s) is inaccurate. » *Note(s):* This Response does not include expired facility registrations, inaccurate facility information, unregistered tanks, or unregistered facilities; such violations should be captured under Question **REG_info**. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must correct the site registration online to reflect the piping leak detection method(s). » *Additional Action(s):* The inspector should note the specific inaccuracy with the piping leak detection under Question **LD_pnov**, to include it in the list of registration discrepancies (in the NOV) that need to be corrected.
LD_pnov	***Which piping LD method(s) should be noted in the NOV?*** ***Note: two methods (maximum) should be selected to be on the registration.***

INV	Inventory Monitoring
INV_val	***Is this LD method valid for the tank system?*** ***Note: inventory monitoring is required for SP2/SP5 UST systems storing motor fuel or kerosene that is sold as part of a commercial transaction.***
Y	» No issues were found under this question.
NV ***[SP3/SP4/SP5]***	» *613-3.3(b)(1) / 4.3(b)(1) / 5.3(a) / 5.3(b):* Inventory monitoring is not a valid leak detection method for the tank (and there are no other valid leak detection methods in use). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid leak detection method.
SM	» Inventory monitoring either is not required for the tank or supplements a different LD method that is being used to meet leak detection requirements.
INV_ld	***Is the LD method being performed periodically?***
Y	» No issues were found under this question.
NL ***[SP2/SP5]***	» *613-2.3(b)(1)(i)(a) / 2.3(b)(1)(ii)(a) / 2.3(b)(1)(iii) / 2.3(c)(1)(vii) / 5.3(a):* Inventory monitoring measurements are not being reconciled. » *Note(s):* Reconciliation records are the primary evidence that inventory monitoring is being performed; if monitoring is being performed, but records are not being retained for at least three years, Response **NR** under Question **INV_ldr** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records/results of) inventory monitoring for 30 days.
PL ***[SP2/SP5]***	» *613-2.3(b)(1)(i)(a) / 2.3(b)(1)(ii)(a) / 2.3(b)(1)(iii) / 2.3(c)(1)(vii) / 5.3(a):* Inventory monitoring measurements are not being reconciled at least every ten days. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records/results of) inventory monitoring for 30 days.
INV_ldr	***Are the LD records being retained?*** ***Note: records must be retained for 3 years.***
Y	» No issues were found under this question.
NR ***[SP2/SP5]***	» *613-2.3(c)(1)(i) / 2.3(g)(1) / 5.3(a):* Inventory monitoring measurements are not being recorded for each operating day, or records are not being retained for at least three years. » *Note(s):* Reconciliation records are the primary evidence that inventory monitoring is being performed; if the records are missing, monitoring is likely not being performed (and Response **NL** under Question **INV_ld** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the monitoring records for the last 30 days, or perform (and submit the records/results of) inventory monitoring for 30 days.

INV_ldc	Was the reconciliation complete/adequate?
Y	» No issues were found under this question.
NWM [SP2/SP5]	» *613-2.3(c)(1)(vi) / 5.3(a):* Water levels are not being recorded as part of the inventory monitoring measurements. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records/results of) inventory monitoring for 30 days and include the corresponding the tank bottom water measurements.
IM [SP2/SP5]	» *613-2.3(c)(1)(vii) / 5.3(a):* Inventory monitoring measurements are not being reconciled properly. » *Note(s):* This includes: - not having ten calendar days per reconciliation interval - not performing reconciliation at least every ten days; not including each calendar day in at least one interval - having different measurements for the same operating day (when in overlapping reconciliation intervals) » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records/results of) inventory monitoring properly for the last 30 days.
INV_gwo	**Is the equipment in good working order?**
Y	» No issues were found under this question.
8M	» *613-1.12 / 2.3(c)(1)(ii) / 5.3(a):* The inventory monitoring equipment is not accurate to 1/8” (over the full range of the tank's height). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must submit documentation showing that equipment capable of accurate measurement is in use.
TC	» *613-1.12 / 2.3(c)(1)(v) / 5.3(a):* The dispenser meter (i.e., totalizer) is not properly calibrated. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must properly calibrate the totalizer and perform (and submit the records/results of) inventory monitoring for 30 days with the properly calibrated meter.

MTG	Manual Tank Gauging
MTG_val	**Is this LD method valid for the tank system?**
Y	» No issues were found under this question.
NV	» *613-2.3(b)(1) / 3.3(b)(1) / 4.3(b)(1) / 5.3(a) / 5.3(b):* Manual tank gauging is not a valid leak detection method for the tank (and there are no other valid leak detection methods in use). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid leak detection method.
TD [SP2/SP5]	» *613-2.3(c)(2)(v) / 5.3(a):* The tank does not meet the allowable dimensions for manual tank gauging. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a tank tightness test within 30 calendar days after the date of the NOV.
SM	» Manual tank gauging either is not required for the tank or supplements a different LD method that is being used to meet leak detection requirements.

MTG_ld	***Is the LD method being performed periodically?***
Y	» No issues were found under this question.
NL ***[SP2/SP5]***	» *613-2.3(b)(1)(i)(a) / 5.3(a):* Manual tank gauging is not being performed. » *Note(s):* Test records are the primary evidence that manual tank gauging is being performed; if tank gauging is being performed, but either the tests are not being recorded or records are not being retained for at least three years, Response **NR** under Question **MTG_ldr** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the records/results of) four weekly manual tank gauging tests AND a tank tightness test, or install/utilize (and submit documentation of) a valid leak detection method.
PL ***[SP2/SP5]***	» *613-2.3(b)(1)(i)(a) / 5.3(a):* Manual tank gauging is not being performed at least weekly. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the records/results of) four weekly manual tank gauging tests AND a tank tightness test, or install/utilize (and submit documentation of) a valid leak detection method. » *Additional Action(s):* There is no need for the curative measure if the most recent weekly test was performed but a previous one was not; this violation, however, should still be cited.
MTG_ldr	***Are the LD records being retained?*** ***Note: records must be retained for 3 years.***
Y	» No issues were found under this question.
NR ***[SP2/SP5]***	» *613-2.3(g)(1) / 5.3(a):* Manual tank gauging tests are not being recorded, or records are not being retained for at least three years. » *Note(s):* Test records are the primary evidence that manual tank gauging is being performed; if the records are missing, tank gauging is likely not being performed (and Response **NL** under Question **MTG_ld** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records/results of the last four weekly manual tank gauging tests, or perform (and submit the records/results of) four weekly manual tank gauging tests.
MTG_ldc	***Was the testing complete/adequate?***
Y	» No issues were found under this question.
TD ***[SP2/SP5]***	» *613-2.3(c)(2)(i) / 2.3(c)(2)(iv) / 5.3(a):* The test does not meet the required minimum duration. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a tank tightness test within 30 calendar days after the date of the NOV.
MTG_gwo	***Is the equipment in good working order?***
Y	» No issues were found under this question.
8M	» *613-1.12 / 2.3(c)(2)(iii) / 5.3(a):* The manual tank gauging equipment is not accurate to 1/8” (over the full range of the tank's height). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit documentation showing that equipment capable of accurate measurement is in use. In addition, the facility must perform (and submit the results of) a tank tightness test within 30 calendar days after the date of the NOV.

ATG	Automatic Tank Gauging
ATG_val	**Is this LD method valid for the tank system?**
Y	» No issues were found under this question.
NV	» *613-2.3(b)(1) / 3.3(b)(1) / 4.3(b)(1) / 5.3(a) / 5.3(b):* Automatic tank gauging is not a valid leak detection method for the tank (and there are no other valid leak detection methods in use). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid leak detection method.
ST **[SP2/SP3/SP5]**	» *613-2.3(c)(4)(i) / 3.3(c)(2)(i) / 5.3(a) / 5.3(b):* The automatic tank gauging system cannot be shown to meet standards. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a tank tightness test within 30 calendar days after the date of the NOV.
SM	» Automatic tank gauging either is not required for the tank or supplements a different LD method that is being used to meet leak detection requirements.
ATG_ld	**Is the LD method being performed periodically?**
Y	» No issues were found under this question.
NL **[SP2/SP3/SP5]**	» *613-2.3(b)(1)(i)(a) / 2.3(b)(1)(i)(b) / 3.3(b)(1)(i)(b) / 3.3(b)(1)(ii) / 5.3(a) / 5.3(b):* Automatic tank gauging is not being performed. » *Note(s):* Test records are the primary evidence that automatic tank gauging is being performed; if tank gauging is being performed, but either the tests are not being recorded or records are not being retained for at least three years, Response **NR** under Question **ATG_ldr** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the records/results of) four weekly leak tests, or install/utilize (and submit documentation of) a valid leak detection method.
PL **[SP2/SP3/SP5]**	» *613-2.3(b)(1)(i)(a) / 2.3(b)(1)(i)(b) / 3.3(b)(1)(i)(b) / 3.3(b)(1)(ii) / 5.3(a) / 5.3(b):* Automatic tank gauging is not being performed at least weekly. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the records/results of) four weekly leak tests, or install/utilize (and submit documentation of) a valid leak detection method. » *Additional Action(s):* There is no need for the curative measure if the most recent weekly leak test was performed but a previous one was not; this violation, however, should still be cited.
ATG_ldr	**Are the LD records being retained?** ***Note: records must be retained for 3 years.***
Y	» No issues were found under this question.
NR **[SP2/SP3/SP5]**	» *613-2.3(g)(1) / 3.3(e)(1) / 5.3(a) / 5.3(b):* Leak tests are not being recorded, or records are not being retained for at least three years. » *Note(s):* Test records are the primary evidence that automatic tank gauging is being performed; if the records are missing, tank gauging is likely not being performed (and Response **NL** under Question **ATG_ld** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records/results of the last four weekly leak tests, or perform (and submit the records/results of) four weekly leak tests.

ATG_gwo	Is the equipment in good working order?
Y	» No issues were found under this question.
IM ***[SP2/SP3/SP5]***	» *613-2.3(c)(4)(iii) / 3.3(c)(2)(ii) / 5.3(a) / 5.3(b):* The automatic tank gauging system is not set up correctly to conduct leak tests (e.g., using an incorrect tank capacity or dimensions), or leak tests are not being performed for the appropriate duration. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must properly calibrate the automatic tank gauging system and perform (and submit the records/results of) three weekly leak tests with the corrected setup.
PLL ***[SP2/SP3/SP5]***	» *613-2.3(c)(4)(i) / 3.3(c)(2)(i) / 5.3(a) / 5.3(b):* Leak tests are being performed when the petroleum level in the tank is lower than what is routinely stored. » *Note(s):* Test records should be reviewed to determine petroleum levels when the tests were performed. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must program the automatic tank gauging system to perform leak tests when the tank is filled (to its normal levels), and perform (and submit the records/results of) leak tests at these levels. » *Additional Action(s):* Tests should be conducted as soon as possible after deliveries; if the tank receives infrequent deliveries, the inspector should review records for tests performed when the tank had its highest levels of petroleum.
O	» *613-1.12 / 2.3(c)(4)(iii) / 3.3(c)(2)(ii) / 5.3(a) / 5.3(b):* The automatic tank gauging system is inoperable. » *Note(s):* The automatic tank gauging system is considered inoperable if any of the following is true: - the probe/float is malfunctioning; - the console is shown to be defective or unpowered; or - the console and the probe/float do not have a connection, per the latest results of either the monthly connectivity inspections (for SP2/SP3/SP5 UST systems) or the annual operability inspections (for SP2/SP5 UST systems). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must repair or replace the automatic tank gauging system, and submit documentation proving that the system has been repaired/replaced and that weekly leak tests are being conducted. » *Additional Action(s):* Automatic tank gauging is likely not being performed if the system is inoperable (see Question **ATG_Id**, Response **NL**).
NX	» *613-1.4(b):* The automatic tank gauging system could not be accessed for inspection (e.g., the console is in a locked room). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must submit documentation showing that the automatic tank gauging system is present and in good working order/properly configured. » *Additional Action(s):* The inspector should perform a follow-up inspection to confirm that the automatic tank gauging system is set up properly and that leak tests are being performed.

ATG_itm	***Is the equipment being inspected periodically?*** ***Note: connectivity inspections are required for all UST systems [SP2/SP3/SP5]. Operability inspections are required for federally regulated UST systems [SP2/SP5].***
Y	» No issues were found under this question.
NC ***[SP2/SP3/SP5]***	» *613-2.2(g)(1) / 3.2(g)(1) / 5.2(g):* Connectivity inspections are not being performed for the automatic tank gauging system. » *Note(s):* Inspection records are the primary evidence that connectivity inspections are being performed; if inspections are being performed, but either the inspections are not being recorded or records are not being retained for at least three years, Response **NRC** under Question **ATG_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) a connectivity inspection.
PC ***[SP2/SP3/SP5]***	» *613-2.2(g)(1) / 3.2(g)(1) / 5.2(g):* Connectivity inspections are not being performed for the automatic tank gauging system at least every 30 days. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) a connectivity inspection.
NO ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(a) – (b) / 5.2(g):* Operability inspections are not being performed for the automatic tank gauging system. » *Note(s):* Inspection records are the primary evidence that operability inspections are being performed; if inspections are being performed, but either the inspections are not being recorded or records are not being retained for at least three years, Response **NRO** under Question **ATG_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection.
PO ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(a) – (b) / 5.2(g):* Operability inspections are not being performed for the automatic tank gauging system at least annually. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection.
ATG_rec	***Are the equipment inspection records being retained?*** ***Note: records must be retained for 3 years.***
Y	» No issues were found under this question.
NRC ***[SP2/SP3/SP5]***	» *613-2.2(g)(1) / 2.2(g)(3) / 3.2(g)(1) / 3.2(g)(3) / 5.2(g):* Connectivity inspections are not being recorded, or records are not being retained for at least three years. » *Note(s):* Inspection records are the primary evidence that connectivity inspections are being performed; if the records are missing, inspections are likely not being performed (and Response **NC** under Question **ATG_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records of the last three connectivity inspections, or perform (and submit the records of) a connectivity inspection.
NRO ***[SP2/SP5]***	» *613-2.2(g)(2) / 2.2(g)(3) / 5.2(g):* Operability inspections are not being recorded, or records are not being retained for at least three years. » *Note(s):* Inspection records are the primary evidence that operability inspections are being performed; if the records are missing, inspections are likely not being performed (and Response **NO** under Question **ATG_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records of the last operability inspection, or perform (and submit the records of) an operability inspection.

ATG_com	Was the equipment (operability) inspection complete/adequate?
Y	» No issues were found under this question.
AL **[SP2/SP5]**	» *613-2.2(g)(2)(ii)(a) – (b) / 5.2(g):* The console alarm was not verified to trigger (when a failed leak test is simulated) as part of the operability inspections. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection and include the alarm in the inspection.
CF **[SP2/SP5]**	» *613-2.2(g)(2)(ii)(a) / 5.2(g):* The automatic tank gauging system configuration was not verified as part of the operability inspections. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection and include the leak rate/tank system configuration in the inspection.
BA **[SP2/SP5]**	» *613-2.2(g)(2)(ii)(a) / 5.2(g):* The (console) battery backup was not verified to have power as part of the operability inspections. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection and include the battery backup in the inspection.
FL **[SP2/SP5]**	» *613-2.2(g)(2)(ii)(b) / 5.2(g):* Floats were not inspected for free movement as part of the operability inspections. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection and include the float(s) in the inspection.
CN **[SP2/SP5]**	» *613-2.2(g)(2)(ii)(b) / 5.2(g):* Probe/float readings (as read through the console) were not verified to match actual petroleum levels in the tank, as part of the operability inspections. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection and include the console communication in the inspection.

VGM	Vapor/Groundwater Monitoring
VGM_val	**Is this LD method valid for the tank system?**
Y	» No issues were found under this question.
NVT	» *613-2.3(b)(1) / 3.3(b)(1) / 4.3(b)(1) / 5.3(a) / 5.3(b):* Vapor/groundwater monitoring is not a valid leak detection method for the tank (and there are no other valid leak detection methods in use). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid leak detection method.
SMT	» Vapor/groundwater monitoring either is not required for the tank or supplements a different LD method that is being used to meet leak detection requirements.
NVP	» *613-2.3(b)(2) / 3.3(b)(2) / 4.3(b)(2) / 5.3(a) / 5.3(b):* Vapor/groundwater monitoring is not a valid leak detection method for the piping (and there are no other valid leak detection methods in use). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid leak detection method.
SMP	» Vapor/groundwater monitoring either is not required for the piping or supplements a different LD method that is being used to meet leak detection requirements.

VGM_Id	Is the LD method being performed periodically?
Y	» No issues were found under this question.
NLT **[SP2/SP3/SP5]**	» *613-2.3(b)(1)(i)(a) / 3.3(b)(1)(i)(b) / 3.3(b)(1)(ii) / 5.3(a) / 5.3(b):* Vapor/groundwater monitoring is not being performed for the tank. » *Note(s):* Sampling records are the primary evidence that vapor/groundwater monitoring is being performed; if monitoring is being performed, but either sampling is not being recorded or records are not being retained for at least three years, Response **NR** under Question **VGM_Idr** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the records of) four weekly samplings, or install/utilize (and submit documentation of) a valid leak detection method.
PLT **[SP2/SP3/SP5]**	» *613-2.3(b)(1)(i)(a) / 3.3(b)(1)(i)(b) / 3.3(b)(1)(ii) / 5.3(a) / 5.3(b):* Vapor/groundwater monitoring is not being performed for the tank at least weekly. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the records of) four weekly samplings, or install/utilize (and submit documentation of) a valid leak detection method. » *Additional Action(s):* There is no need for the curative measure if the most recent weekly sampling was performed but a previous one was not; this violation, however, should still be cited.
NLP **[SP2/SP3/SP5]**	» *613-2.3(b)(2)(i)(a)(3) / 2.3(b)(2)(i)(b)(3) / 2.3(b)(2)(ii)(a) / 2.3(b)(2)(ii)(b) / 2.3(b)(2)(iii) / 3.3(b)(2)(i)(a)(3) / 5.3(a) / 5.3(b):* Vapor/groundwater monitoring is not being performed for the piping. » *Note(s):* Sampling records are the primary evidence that vapor/groundwater monitoring is being performed; if monitoring is being performed, but either sampling is not being recorded or records are not being retained for at least three years, Response **NR** under Question **VGM_Idr** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the records of) four weekly samplings, or install/utilize (and submit documentation of) a valid leak detection method.
PLP **[SP2/SP3/SP5]**	» *613-2.3(b)(2)(i)(a)(3) / 2.3(b)(2)(i)(b)(3) / 2.3(b)(2)(ii)(a) / 2.3(b)(2)(ii)(b) / 2.3(b)(2)(iii) / 3.3(b)(2)(i)(a)(3) / 5.3(a) / 5.3(b):* Vapor/groundwater monitoring is not being performed for the piping at least weekly. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the records of) four weekly samplings, or install/utilize (and submit documentation of) a valid leak detection method. » *Additional Action(s):* There is no need for the curative measure if the most recent weekly sampling was performed but a previous one was not; this violation, however, should still be cited.
VGM_Idr	***Are the LD records being retained?*** ***Note: records must be retained for 3 years.***
Y	» No issues were found under this question.
NR **[SP2/SP3/SP5]**	» *613-2.3(g)(1) / 3.3(e)(1) / 5.3(a) / 5.3(b):* Vapor/groundwater monitoring is not being recorded, or records are not being retained for at least three years. » *Note(s):* Sampling records are the primary evidence that vapor/groundwater monitoring is being performed; if the records are missing, monitoring is likely not being performed (and Response **NLT**/**NLP** under Question **VGM_Id** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records of the last four weekly samplings, or perform (and submit the records of) four weekly samplings.

VGM_gwo	***Is the equipment in good working order?*** ***Note: answering this question is not necessary if the site assessment report is missing - Question VGM_mis should be answered instead.***
Y	» No issues were found under this question.
WDT ***[SP2/SP3/SP5]***	» *613-2.3(c)(5)(vi) / 2.3(c)(6)(vii) / 3.3(c)(3)(vi) / 3.3(c)(4)(vii) / 5.3(a) / 5.3(b):* The site assessment report does not indicate that the wells either meet all design standards or will detect leaks from all portions of the tank system. » *Note(s):* Note that Responses **GWT** or **VWT** should be selected instead if either response better describes individual issues found with the wells. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a tank tightness test within 30 calendar days after the date of the NOV.
GWT ***[SP2/SP3/SP5]***	» *613-2.3(c)(6)(ii) / 3.3(c)(4)(ii) / 5.3(a) / 5.3(b):* The site assessment report does not indicate that groundwater is either always detectable within the groundwater wells or never more than 20’ from the ground surface. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a tank tightness test within 30 calendar days after the date of the NOV.
VWT ***[SP2/SP3/SP5]***	» *613-2.3(c)(5)(iii) / 3.3(c)(3)(iii) / 5.3(a) / 5.3(b):* The site assessment report does not indicate that the vapor monitoring wells are never affected by groundwater, rainfall, soil moisture, etc. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a tank tightness test within 30 calendar days after the date of the NOV.
WDP ***[SP2/SP3/SP5]***	» *613-2.3(c)(5)(vi) / 2.3(c)(6)(vii) / 2.3(d)(3) / 3.3(c)(3)(vi) / 3.3(c)(4)(vii) / 5.3(a) / 5.3(b):* The site assessment report does not indicate that the wells either meet all design standards or will detect leaks from all portions of the tank system. » *Note(s):* Note that Responses **GWP** or **VWP** should be selected instead if either response better describes individual issues found with the wells. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a line tightness test within 30 calendar days after the date of the NOV.
GWP ***[SP2/SP3/SP5]***	» *613-2.3(c)(6)(ii) / 2.3(d)(3) / 3.3(c)(4)(ii) / 5.3(a) / 5.3(b):* The site assessment report does not indicate that groundwater is either always detectable within the groundwater wells or never more than 20’ from the ground surface. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a line tightness test within 30 calendar days after the date of the NOV.
VWP ***[SP2/SP3/SP5]***	» *613-2.3(c)(5)(iii) / 2.3(d)(3) / 3.3(c)(3)(iii) / 5.3(a) / 5.3(b):* The site assessment report does not indicate that the vapor monitoring wells are never affected by groundwater, rainfall, soil moisture, etc. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a line tightness test within 30 calendar days after the date of the NOV.

VGM_itm	***Is the equipment being inspected periodically?*** ***Note: connectivity inspections are required for all UST systems [SP2/SP3/SP5]. Operability inspections are required for federally regulated UST systems [SP2/SP5].***
Y	» No issues were found under this question.
NC ***[SP2/SP3/SP5]***	» *613-2.2(g)(1) / 3.2(g)(1) / 5.2(g):* Connectivity inspections are not being performed for the vapor/groundwater monitoring system. » *Note(s):* Inspection records are the primary evidence that connectivity inspections are being performed; if inspections are being performed, but either the inspections are not being recorded or records are not being retained for at least three years, Response **NRC** under Question **VGM_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) a connectivity inspection.
PC ***[SP2/SP3/SP5]***	» *613-2.2(g)(1) / 3.2(g)(1) / 5.2(g):* Connectivity inspections are not being performed for the vapor/groundwater monitoring system at least every 30 days. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) a connectivity inspection.
XPC ***[SP2/SP3/SP5]***	» Connectivity inspections are not required because vapor/groundwater monitoring is performed with non-electronic equipment.
NO ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(a) / 2.2(g)(2)(ii)(b) / 2.2(g)(2)(ii)(e) / 5.2(g):* Operability inspections are not being performed for the vapor/groundwater monitoring equipment. » *Note(s):* Inspection records are the primary evidence that operability inspections are being performed; if inspections are being performed, but either the inspections are not being recorded or records are not being retained for at least three years, Response **NRO** under Question **VGM_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection.
PO ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(a) / 2.2(g)(2)(ii)(b) / 2.2(g)(2)(ii)(e) / 5.2(g):* Operability inspections are not being performed for the vapor/groundwater monitoring equipment at least annually. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection.
VGM_rec	***Are the equipment inspection records being retained?*** ***Note: records must be retained for 3 years.***
Y	» No issues were found under this question.
NRC ***[SP2/SP3/SP5]***	» *613-2.2(g)(1) / 2.2(g)(3) / 3.2(g)(1) / 3.2(g)(3) / 5.2(g):* Connectivity inspections are not being recorded, or records are not being retained for at least three years. » *Note(s):* Inspection records are the primary evidence that connectivity inspections are being performed; if the records are missing, inspections are likely not being performed (and Response **NC** under Question **VGM_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records of the last three connectivity inspections, or perform (and submit the records of) a connectivity inspection.
NRO ***[SP2/SP5]***	» *613-2.2(g)(2) / 2.2(g)(3) / 5.2(g):* Operability inspections are not being recorded, or records are not being retained for at least three years. » *Note(s):* Inspection records are the primary evidence that operability inspections are being performed; if the records are missing, inspections are likely not being performed (and Response **NO** under Question **VGM_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records of the last operability inspection, or perform (and submit the records of) an operability inspection.

VGM_com	Was the equipment (operability) inspection complete/adequate?
Y	» No issues were found under this question.
AL ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(a) – (b) / 5.2(g):* The console alarm was not verified to trigger (when a failed leak test is simulated) as part of the operability inspections. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection and include the alarm in the inspection.
CF ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(a) / 5.2(g):* The automatic tank gauging system configuration was not verified as part of the operability inspections. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection and include the leak rate/tank system configuration in the inspection.
BA ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(a) / 5.2(g):* The (console) battery backup was not verified to have power as part of the operability inspections. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection and include the battery backup in the inspection.
FL ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(b) / 5.2(g):* Floats were not inspected for free movement as part of the operability inspections. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection and include the float(s) in the inspection.
CN ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(b) / 5.2(g):* Probe/float readings (as read through the console) were not verified to match actual petroleum levels in the tank, as part of the operability inspections. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection and include the console communication in the inspection.

VGM_mis	Are there any other observed violations?
SAT ***[SP2/SP3/SP5]***	» *613-2.3(c)(5)(vi) / 2.3(c)(6)(vii) / 3.3(c)(3)(vi) / 3.3(c)(4)(vii) / 5.3(a) / 5.3(b):* A site assessment was not performed for the (tank) excavation zone prior to the use of vapor/groundwater monitoring. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform a site assessment and submit a copy of the report. » *Additional Action(s):* If the assessment report indicates that the monitoring wells do not meet standards, another form of leak detection will need to be utilized.
PET ***[SP2/SP5]***	» *613-2.3(c)(5)(vi) / 2.3(c)(6)(vii) / 5.3(a):* The site assessment report was developed after October 13, 2015 but was not signed by a NYS-licensed/registered professional engineer/geologist. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either obtain a signoff from a NYS-licensed/registered professional engineer/geologist, or perform a site assessment and submit a copy of the report. » *Additional Action(s):* If the assessment report indicates that the monitoring wells do not meet standards, another form of leak detection will need to be utilized.
NRT ***[SP2/SP5]***	» *613-2.3(g)(4) / 5.3(a):* The site assessment report is not being retained for at least as long as vapor/groundwater monitoring is used as a (tank) leak detection method. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform a site assessment and submit a copy of the report. » *Additional Action(s):* If the assessment report indicates that the monitoring wells do not meet standards, another form of leak detection will need to be utilized.
SAP ***[SP2/SP3/SP5]***	» *613-2.3(c)(5)(vi) / 2.3(c)(6)(vii) / 2.3(d)(3) / 3.3(c)(3)(vi) / 3.3(c)(4)(vii) / 5.3(a) / 5.3(b):* A site assessment was not performed for the (piping) excavation zone prior to the use of vapor/groundwater monitoring. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform a site assessment and submit a copy of the report. » *Additional Action(s):* If the assessment report indicates that the monitoring wells do not meet standards, another form of leak detection will need to be utilized.
PEP ***[SP2/SP5]***	» *613-2.3(c)(5)(vi) / 2.3(c)(6)(vii) / 5.3(a):* The site assessment report was developed after October 13, 2015 but was not signed by a NYS-licensed/registered professional engineer/geologist. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either obtain a signoff from a NYS-licensed/registered professional engineer/geologist, or perform a site assessment and submit a copy of the report. » *Additional Action(s):* If the assessment report indicates that the monitoring wells do not meet standards, another form of leak detection will need to be utilized.
NRP ***[SP2/SP5]***	» *613-2.3(g)(4) / 5.3(a):* The site assessment report is not being retained for at least as long as vapor/groundwater monitoring is used as a (piping) leak detection method. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform a site assessment and submit a copy of the report. » *Additional Action(s):* If the assessment report indicates that the monitoring wells do not meet standards, another form of leak detection will need to be utilized.

INS	Interstitial Monitoring
INS_val	**Is this LD method valid for the tank system?**
Y	» No issues were found under this question.
NVT	» *613-2.3(b)(1) / 3.3(b)(1) / 4.3(b)(1) / 5.3(a) / 5.3(b):* Interstitial monitoring is not a valid leak detection method for the tank (and there are no other valid leak detection methods in use). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid leak detection method.
SMT	» Interstitial monitoring either is not required for the tank or supplements a different LD method that is being used to meet leak detection requirements.
NVP	» *613-2.3(b)(2) / 3.3(b)(2) / 4.3(b)(2) / 5.3(a) / 5.3(b):* Interstitial monitoring is not a valid leak detection method for the piping (and there are no other valid leak detection methods in use). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid leak detection method.
SMP	» Interstitial monitoring either is not required for the piping or supplements a different LD method that is being used to meet leak detection requirements.
INS_ld	**Is the LD method being performed periodically?**
Y	» No issues were found under this question.
NLT *[SP2/SP3/SP5]*	» *613-2.3(b)(1)(i)(a) / 2.3(b)(1)(i)(b) / 2.3(b)(1)(ii)(a) / 2.3(b)(1)(ii)(b) / 2.3(b)(1)(iii) / 3.3(b)(1)(i)(b) / 3.3(b)(1)(ii) / 3.3(b)(1)(iii) / 5.3(a) / 5.3(b):* Interstitial monitoring is not being performed for the tank. » *Note(s):* Monitoring records are the primary evidence that interstitial monitoring is being performed; if monitoring is being performed, but either the monitoring is not being recorded or records are not being retained for at least three years, Response **NR** under Question **INS_ldr** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) interstitial monitoring for four weeks.
PLT *[SP2/SP3/SP5]*	» *613-2.3(b)(1)(i)(a) / 2.3(b)(1)(i)(b) / 2.3(b)(1)(ii)(a) / 2.3(b)(1)(ii)(b) / 2.3(b)(1)(iii) / 3.3(b)(1)(i)(b) / 3.3(b)(1)(ii) / 3.3(b)(1)(iii) / 5.3(a) / 5.3(b):* Interstitial monitoring is not being performed for the tank at least weekly. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) interstitial monitoring for four weeks. » *Additional Action(s):* There is no need for the curative measure if the most recent weekly monitoring was performed but a previous one was not; this violation, however, should still be cited.
NLP *[SP2/SP3/SP5]*	» *613-2.3(b)(2)(i)(a)(3) / 2.3(b)(2)(i)(b)(3) / 2.3(b)(2)(i)(c) / 2.3(b)(2)(ii)(a) / 2.3(b)(2)(ii)(b) / 2.3(b)(2)(ii)(c) / 2.3(b)(2)(iii) / 3.3(b)(2)(i)(a)(3) / 5.3(a) / 5.3(b):* Interstitial monitoring is not being performed for the piping. » *Note(s):* Monitoring records are the primary evidence that interstitial monitoring is being performed; if monitoring is being performed, but either the monitoring is not being recorded or records are not being retained for at least three years, Response **NR** under Question **INS_ldr** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) interstitial monitoring for four weeks.
PLP *[SP2/SP3/SP5]*	» *613-2.3(b)(2)(i)(a)(3) / 2.3(b)(2)(i)(b)(3) / 2.3(b)(2)(i)(c) / 2.3(b)(2)(ii)(a) / 2.3(b)(2)(ii)(b) / 2.3(b)(2)(ii)(c) / 2.3(b)(2)(iii) / 3.3(b)(2)(i)(a)(3) / 5.3(a) / 5.3(b):* Interstitial monitoring is not being performed for the piping at least weekly. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) interstitial monitoring for four weeks. » *Additional Action(s):* There is no need for the curative measure if the most recent weekly monitoring was performed but a previous one was not; this violation, however, should still be cited.

INS_ldr	***Are the LD records being retained?*** ***Note: records must be retained for 3 years.***
Y	» No issues were found under this question.
NR ***[SP2/SP3/SP5]***	» *613-2.3(g)(1) / 3.3(e)(1) / 5.3(a) / 5.3(b):* Interstitial monitoring is not being recorded, or records are not being retained for at least three years. » *Note(s):* Monitoring records are the primary evidence that interstitial monitoring is being performed; if the records are missing, interstitial monitoring is likely not being performed (and Response **NLT**/**NLP** under Question **INS_ld** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the monitoring records for the last four weeks, or perform (and submit the records of) interstitial monitoring for four weeks.
INS_gwo	***Is the equipment in good working order?***
Y	» No issues were found under this question.
NXT	» *613-1.4(b):* The (tank) interstitial monitoring equipment could not be accessed for inspection. » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must submit documentation showing that the monitoring equipment is present and in good working order. » *Additional Action(s):* The inspector should conduct a follow-up inspection (where possible) to observe the electronic equipment rather than rely on installation documentation or photographs from the facility.
SO	» *613-1.12 / 2.3(a)(1)(i) – (ii) / 3.3(a)(1)(i) – (ii) / 5.3(a) / 5.3(b):* The monitoring equipment is inoperable. » *Note(s):* The monitoring equipment is considered inoperable if any of the following is true: - the sensor is malfunctioning; - the tank monitoring console is shown to be defective or unpowered; or - the console and the sensor do not have a connection, per the latest results of either the monthly connectivity inspections (for SP2/SP3/SP5 UST systems) or the annual operability inspections (for SP2/SP5 UST systems). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a work plan for the facility to repair or replace the inoperable equipment within 60 days after the date of the NOV.
8M	» *613-1.12:* The interstitial monitoring equipment is not accurate to 1/8”. » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must submit documentation showing that equipment capable of accurate measurement is in use.
SSP ***[SP2/SP3/SP5]***	» *613-2.3(a)(1)(i) – (ii) / 3.3(a)(1)(i) – (ii) / 5.3(a) / 5.3(b):* The sump sensor is positioned such that it would not detect a leak if one were to occur. » *Note(s):* Common scenarios include sensors located away from/above the lowest point of the sump (where contained liquids would pool), and sensors not placed vertically (e.g., horizontally, upside-down). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must fix the positioning of the sump sensor and submit a photograph showing the properly repositioned sensor.
NXP	» *613-1.4(b):* The (piping) interstitial monitoring equipment could not be accessed for inspection. » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must submit documentation showing that the monitoring equipment is present and in good working order. » *Additional Action(s):* The inspector should conduct a follow-up inspection (where possible) to observe the electronic equipment rather than rely on installation documentation or photographs from the facility.

INS_itm	***Is the equipment being inspected periodically?*** ***Note: connectivity inspections are required for all UST systems [SP2/SP3/SP5]. Operability inspections are required for federally regulated UST systems [SP2/SP5].***
Y	» No issues were found under this question.
NC ***[SP2/SP3/SP5]***	» *613-2.2(g)(1) / 3.2(g)(1) / 5.2(g):* Connectivity inspections are not being performed for the interstitial monitoring system. » *Note(s):* Inspection records are the primary evidence that connectivity inspections are being performed; if inspections are being performed, but either the inspections are not being recorded or records are not being retained for at least three years, Response **NRC** under Question **INS_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) a connectivity inspection.
PC ***[SP2/SP3/SP5]***	» *613-2.2(g)(1) / 3.2(g)(1) / 5.2(g):* Connectivity inspections are not being performed for the interstitial monitoring system at least every 30 days. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) a connectivity inspection.
XPC ***[SP2/SP3/SP5]***	» Connectivity inspections are not required because interstitial monitoring is performed with non-electronic equipment.
NO ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(a) / 2.2(g)(2)(ii)(b) / 2.2(g)(2)(ii)(d) / 5.2(g):* Operability inspections are not being performed for the interstitial monitoring equipment. » *Note(s):* Inspection records are the primary evidence that operability inspections are being performed; if inspections are being performed, but either the inspections are not being recorded or records are not being retained for at least three years, Response **NRO** under Question **INS_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection.
PO ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(a) / 2.2(g)(2)(ii)(b) / 2.2(g)(2)(ii)(d) / 5.2(g):* Operability inspections are not being performed for the interstitial monitoring equipment at least annually. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection.
INS_rec	***Are the equipment inspection records being retained?*** ***Note: records must be retained for 3 years.***
Y	» No issues were found under this question.
NRC ***[SP2/SP3/SP5]***	» *613-2.2(g)(1) / 2.2(g)(3) / 3.2(g)(1) / 3.2(g)(3) / 5.2(g):* Connectivity inspections are not being recorded, or records are not being retained for at least three years. » *Note(s):* Inspection records are the primary evidence that connectivity inspections are being performed; if the records are missing, inspections are likely not being performed (and Response **NC** under Question **INS_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records of the last three connectivity inspections, or perform (and submit the records of) a connectivity inspection.
NRO ***[SP2/SP5]***	» *613-2.2(g)(2) / 2.2(g)(3) / 5.2(g):* Operability inspections are not being recorded, or records are not being retained for at least three years. » *Note(s):* Inspection records are the primary evidence that operability inspections are being performed; if the records are missing, inspections are likely not being performed (and Response **NO** under Question **INS_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records of the last operability inspection, or perform (and submit the records of) an operability inspection.

INS_com	*Was the equipment (operability) inspection complete/adequate?*
Y	» No issues were found under this question.
AL ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(a) – (b) / 5.2(g):* The console alarm was not verified to trigger (when a failed leak test is simulated) as part of the operability inspections. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection and include the alarm in the inspection.
BU ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(b) / 5.2(g):* The sensor(s) was not inspected for residual buildup as part of the operability inspections. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection and include sensor residual buildup in the inspection.
KB ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(b) / 5.2(g):* Visible sensor cables were not inspected for kinks/breaks as part of the operability inspections. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection and include sensor cables in the inspection.
FL ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(b) / 5.2(g):* Floats were not inspected for free movement as part of the operability inspections. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection and include the float(s) in the inspection.
CN ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(b) / 5.2(g):* Sensors were not inspected for proper communication with/identification on the console, as part of the operability inspections. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection and include the console communication in the inspection.

SIR	Statistical Inventory Reconciliation
SIR_val	***Is this LD method valid for the tank system?*** ***Note: SIR is not valid for tank systems with unmetered dispensers.***
Y	» No issues were found under this question.
NVT	» *613-2.3(b)(1) / 3.3(b)(1) / 4.3(b)(1) / 5.3(a) / 5.3(b):* Statistical inventory reconciliation is not a valid leak detection method for the tank (and there are no other valid leak detection methods in use). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid leak detection method.
NWT [SP2/SP5]	» *613-2.3(c)(8) / 5.3(a):* The statistical inventory reconciliation test method cannot be shown to meet standards. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a tank tightness test within 30 calendar days after the date of the NOV.
SMT	» Statistical inventory reconciliation either is not required for the tank or supplements a different LD method that is being used to meet leak detection requirements.
NVP	» *613-2.3(b)(2) / 3.3(b)(2) / 4.3(b)(2) / 5.3(a) / 5.3(b):* Statistical inventory reconciliation is not a valid leak detection method for the piping (and there are no other valid leak detection methods in use). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid leak detection method.
NWP [SP2/SP5]	» *613-2.3(c)(8) / 5.3(a):* The statistical inventory reconciliation test method cannot be shown to meet standards. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a line tightness test within 30 calendar days after the date of the NOV.
SMP	» Statistical inventory reconciliation either is not required for the piping or supplements a different LD method that is being used to meet leak detection requirements.

SIR_ld	Is the LD method being performed periodically?
Y	» No issues were found under this question.
NLT **[SP2/SP5]**	» *613-2.3(b)(1)(i)(a) / 5.3(a):* Statistical inventory reconciliation measurements are not being reconciled for the tank. » *Note(s):* Reconciliation records are the primary evidence that statistical inventory reconciliation is being performed; if reconciliation is being performed, but either SIR is not being recorded or records are not being retained for at least three years, Response **NR** under Question **SIR_ldr** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the records/results of) four weekly SIR tests, or install/utilize (and submit documentation of) a valid leak detection method.
PLT **[SP2/SP5]**	» *613-2.3(b)(1)(i)(a) / 5.3(a):* Statistical inventory reconciliation measurements are not being reconciled for the tank at least weekly. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the records/results of) four weekly SIR tests, or install/utilize (and submit documentation of) a valid leak detection method. » *Additional Action(s):* There is no need for the curative measure if the most recent weekly SIR test was performed but a previous one was not; this violation, however, should still be cited.
NLP **[SP2/SP5]**	» *613-2.3(b)(2)(i)(a)(3) / 2.3(b)(2)(i)(b)(3) / 2.3(b)(2)(ii)(a) / 2.3(b)(2)(ii)(b) / 2.3(b)(2)(iii) / 5.3(a):* Statistical inventory reconciliation measurements are not being reconciled for the piping. » *Note(s):* Reconciliation records are the primary evidence that statistical inventory reconciliation is being performed; if reconciliation is being performed, but either SIR is not being recorded or records are not being retained for at least three years, Response **NR** under Question **SIR_ldr** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the records/results of) four weekly SIR tests, or install/utilize (and submit documentation of) a valid leak detection method.
PLP **[SP2/SP5]**	» *613-2.3(b)(2)(i)(a)(3) / 2.3(b)(2)(i)(b)(3) / 2.3(b)(2)(ii)(a) / 2.3(b)(2)(ii)(b) / 2.3(b)(2)(iii) / 5.3(a):* Statistical inventory reconciliation measurements are not being reconciled for the piping at least weekly. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the records/results of) four weekly SIR tests, or install/utilize (and submit documentation of) a valid leak detection method. » *Additional Action(s):* There is no need for the curative measure if the most recent weekly SIR test was performed but a previous one was not; this violation, however, should still be cited.
SIR_ldr	***Are the LD records being retained?*** ***Note: records must be retained for 3 years.***
Y	» No issues were found under this question.
NR **[SP2/SP5]**	» *613-2.3(g)(1) / 5.3(a):* Statistical inventory reconciliation is not being recorded, or records are not being retained for at least three years. » *Note(s):* Reconciliation records are the primary evidence that SIR is being performed; if the records are missing, reconciliation is likely not being performed (and Response **NLT**/**NLP** under Question **SIR_ld** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records/results of the last four weekly SIR tests, or perform (and submit the records/results of) four weekly SIR tests.

SIR_ldc	Was the reconciliation complete/adequate?
Y	» No issues were found under this question.
INC [SP2/SP5]	» *613-2.3(c)(8)(i) – (iii) / 5.3(a):* Statistical inventory reconciliation records do not include the minimum detectible leak rate, the leak threshold, and/or the calculated leak rate. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the records/results of) four weekly SIR tests, or install/utilize (and submit documentation of) a valid leak detection method.
QLT [SP2/SP5]	» *613-2.3(c)(8) / 5.3(a):* Statistical inventory reconciliation records do not indicate qualitative results (i.e., pass/fail/inconclusive) based on the comparison between the calculated leak rate and both the minimum detectible leak rate and the leak threshold. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records/results of the last four weekly SIR tests (with qualitative results), or perform (and submit the records/results of) four weekly SIR tests with qualitative results.
SIR_gwo	**Is the equipment in good working order?**
Y	» No issues were found under this question.
SO	» *613-1.12 / 2.3(a)(1)(i) – (ii) / 5.3(a) / 5.3(b):* The statistical inventory reconciliation equipment is inoperable. » *Note(s):* The monitoring equipment is considered inoperable if any of the following is true: - the sensor is malfunctioning; - the tank monitoring console is shown to be defective or unpowered; or - the console and the sensor do not have a connection, per the latest results of either the monthly connectivity inspections (for SP2/SP3/SP5 UST systems) or the annual operability inspections (for SP2/SP5 UST systems). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a work plan for the facility to repair or replace the inoperable equipment within 60 days after the date of the NOV.
8M	» *613-1.12 / 2.3(c)(8) / 5.3(a):* The statistical inventory reconciliation equipment is not accurate to 1/8” (over the full range of the tank's height). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must submit documentation showing that equipment capable of accurate measurement is in use.
TC	» *613-1.12 / 2.3(a)(1)(ii) / 2.3(c)(8) / 5.3(a):* The dispenser meter (i.e., totalizer) is not properly calibrated. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must properly calibrate the totalizer and perform (and submit the records/results of) four weekly SIR tests with the properly calibrated meter.

SIR_itm	***Is the equipment being inspected periodically?*** ***Note: connectivity inspections are required for all UST systems [SP2/SP3/SP5]. Operability inspections are required for federally regulated UST systems [SP2/SP5].***
Y	» No issues were found under this question.
NC ***[SP2/SP5]***	» *613-2.2(g)(1) / 5.2(g):* Connectivity inspections are not being performed for the statistical inventory reconciliation equipment. » *Note(s):* Inspection records are the primary evidence that connectivity inspections are being performed; if inspections are being performed, but either the inspections are not being recorded or records are not being retained for at least three years, Response **NRC** under Question **SIR_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) a connectivity inspection.
PC ***[SP2/SP5]***	» *613-2.2(g)(1) / 5.2(g):* Connectivity inspections are not being performed for the statistical inventory reconciliation equipment at least every 30 days. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) a connectivity inspection.
XPC ***[SP2/SP5]***	» Connectivity inspections are not required because statistical inventory reconciliation is performed with non-electronic equipment.
NO ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(a) / 2.2(g)(2)(ii)(b) / 2.2(g)(2)(ii)(d) / 5.2(g):* Operability inspections are not being performed for the statistical inventory reconciliation equipment. » *Note(s):* Inspection records are the primary evidence that operability inspections are being performed; if inspections are being performed, but either the inspections are not being recorded or records are not being retained for at least three years, Response **NRO** under Question **SIR_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection.
PO ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(a) / 2.2(g)(2)(ii)(b) / 2.2(g)(2)(ii)(d) / 5.2(g):* Operability inspections are not being performed for the statistical inventory reconciliation equipment at least annually. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection.
SIR_rec	***Are the equipment inspection records being retained?*** ***Note: records must be retained for 3 years.***
Y	» No issues were found under this question.
NRC ***[SP2/SP5]***	» *613-2.2(g)(1) / 2.2(g)(3) / 5.2(g):* Connectivity inspections are not being recorded, or records are not being retained for at least three years. » *Note(s):* Inspection records are the primary evidence that connectivity inspections are being performed; if the records are missing, inspections are likely not being performed (and Response **NC** under Question **SIR_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records of the last three connectivity inspections, or perform (and submit the records of) a connectivity inspection.
NRO ***[SP2/SP5]***	» *613-2.2(g)(2) / 2.2(g)(3) / 5.2(g):* Operability inspections are not being recorded, or records are not being retained for at least three years. » *Note(s):* Inspection records are the primary evidence that operability inspections are being performed; if the records are missing, inspections are likely not being performed (and Response **NO** under Question **SIR_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records of the last operability inspection, or perform (and submit the records of) an operability inspection.

TTTF	Tank Tightness Testing (FCTs)
TTTF_val	***Is this LD method valid for the tank system?*** ***Note: FCT tightness testing is a valid (primary) LD method only for SP2 (or SP5), Cat. 1/2 field-constructed USTs with a design capacity greater than 50,000 gallons.***
Y	» No issues were found under this question.
NV	» *613-2.3(b)(1) / 3.3(b)(1) / 4.3(b)(1) / 5.3(a) / 5.3(b):* FCT tightness testing is not a valid leak detection method for the tank (and there are no other valid leak detection methods in use). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid leak detection method.
NW [SP2/SP5]	» *613-2.3(e)(1) / 2.3(e)(2)(i) / 2.3(e)(2)(ii) / 2.3(e)(4)(iii)(a) / 5.3(a):* The FCT tightness testing method cannot be shown to meet standards. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) an FCT tightness test within 30 calendar days after the date of the NOV.
SM	» FCT tightness testing either is not required for the tank or supplements a different LD method that is being used to meet leak detection requirements.

TTTF_Id	*Is the LD method being performed periodically?*
Y	» No issues were found under this question.
NL ***[SP2/SP5]***	» *613-2.3(b)(1)(i)(b) / 2.3(b)(1)(ii)(b) / 2.3(e)(1) / 2.3(e)(2)(i) / 2.3(e)(2)(ii) / 2.3(e)(4)(iii)(a) / 5.3(a):* FCT tightness testing is not being performed for the tank. » *Note(s):* Test results are the primary evidence that tightness testing is being performed; if testing is being performed, but either a copy of the test results was not submitted to the DEC within 30 days after the test, or test results are not being retained for the required minimum duration, Response **NR** or **NS** under Question **TTTF_Idr** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the results of) a FCT tightness test, or install/utilize (and submit documentation of) a valid leak detection method.
PL1 ***[SP2/SP5]***	» *613-2.3(b)(1)(i)(b) / 2.3(b)(1)(ii)(b) / 2.3(e)(1) / 2.3(e)(4)(iii)(a) / 5.3(a):* FCT tightness testing is not being performed for the tank at least annually. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the results of) a FCT tightness test, or install/utilize (and submit documentation of) a valid leak detection method. » *Additional Action(s):* There is no need for the curative measure if the most recent annual tightness test was performed but a previous one was not; this violation, however, should still be cited.
PL2 ***[SP2/SP5]***	» *613-2.3(b)(1)(i)(b) / 2.3(b)(1)(ii)(b) / 2.3(e)(2)(ii) / 5.3(a):* FCT tightness testing is not being performed for the tank at least biennially. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the results of) a FCT tightness test, or install/utilize (and submit documentation of) a valid leak detection method. » *Additional Action(s):* There is no need for the curative measure if the most recent biennial tightness test was performed but a previous one was not; this violation, however, should still be cited.
PL3 ***[SP2/SP5]***	» *613-2.3(b)(1)(i)(b) / 2.3(b)(1)(ii)(b) / 2.3(e)(2)(i) / 5.3(a):* FCT tightness testing is not being performed for the tank at least triennially. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the results of) a FCT tightness test, or install/utilize (and submit documentation of) a valid leak detection method. » *Additional Action(s):* There is no need for the curative measure if the most recent triennial tightness test was performed but a previous one was not; this violation, however, should still be cited.

TTTF_ldr	*Are the LD records being retained?* ***Note: records must be retained for 3 years or until the next test, whichever is later.***
Y	» No issues were found under this question.
NR ***[SP2/SP5]***	» *613-2.3(g)(2) / 5.3(a):* FCT tightness test results are not being retained for at least three years or until the next test (whichever is later). » *Note(s):* Test results are the primary evidence that tightness testing is being performed; if test results cannot be produced AND copies were not submitted to the DEC within 30 days after the test, tightness testing is likely not being performed (and Response **NL** under Question **TTTF_ld** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the results of the last test, or perform (and submit the results of) a FCT tightness test.
NS ***[SP2/SP5]***	» *613-2.3(g)(3) / 5.3(a):* A copy of the FCT tightness test results was not submitted to the DEC within 30 days after the test was performed. » *Note(s):* Test results are the primary evidence that tightness testing is being performed; if test results cannot be produced AND copies were not submitted to the DEC within 30 days after the test, tightness testing is likely not being performed (and Response **NL** under Question **TTTF_ld** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the results of the last test, or perform (and submit the results of) a FCT tightness test.
TTTF_ldc	***Was the testing complete/adequate?***
Y	» No issues were found under this question.
IN ***[SP2/SP5]***	» *613-2.3(g)(2) / 5.3(a):* The FCT tightness test results do not have all of the required information. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a FCT tightness test and include all required information.
QT ***[SP2/SP5]***	» *613-2.3(c)(3)(ii) / 2.3(e)(1) / 2.3(e)(2)(i) / 2.3(e)(2)(ii) / 2.3(e)(4)(iii)(a) / 5.3(a):* The FCT tightness test was not performed by a qualified technician. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a FCT tightness test.

ATGF	***Automatic Tank Gauging (FCTs)***
ATGF_val	***Is this LD method valid for the tank system?*** ***Note: automatic tank gauging (FCTs) is a valid LD method only for SP2 (or SP5), Cat. 1/2 field-constructed USTs with a design capacity greater than 50,000 gallons. (This method must be used in conjunction with biennial or triennial tightness testing (0.2 gph) of the FCT to be acceptable.)***
Y	» No issues were found under this question.
NV	» *613-2.3(b)(1) / 3.3(b)(1) / 4.3(b)(1) / 5.3(a) / 5.3(b):* FCT automatic tank gauging (with biennial or triennial FCT tightness testing) is not a valid leak detection method for the tank (and there are no other valid leak detection methods in use). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid leak detection method.
ST ***[SP2/SP5]***	» *613-2.3(e)(2)(i) / 2.3(e)(2)(ii) / 5.3(a):* The FCT automatic tank gauging system cannot be shown to meet standards. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a tank tightness test within 30 calendar days after the date of the NOV.
SM	» FCT automatic tank gauging either is not required for the tank or supplements a different LD method that is being used to meet leak detection requirements.
ATGF_ld	***Is the LD method being performed periodically?***
Y	» No issues were found under this question.
NL ***[SP2/SP5]***	» *613-2.3(b)(1)(i)(b) / 2.3(b)(1)(ii)(b) / 2.3(e)(2)(i) / 2.3(e)(2)(ii) / 5.3(a):* FCT automatic tank gauging (with biennial or triennial FCT tightness testing) is not being performed. » *Note(s):* Test records are the primary evidence that automatic tank gauging is being performed; if tank gauging is being performed, but either the tests are not being recorded or records are not being retained for at least three years, Response **NR** under Question **ATGF_ldr** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the records/results of) four weekly leak tests, or install/utilize (and submit documentation of) a valid leak detection method.
PL ***[SP2/SP5]***	» *613-2.3(b)(1)(i)(b) / 2.3(b)(1)(ii)(b) / 2.3(e)(2)(i) / 2.3(e)(2)(ii) / 5.3(a):* FCT automatic tank gauging (with biennial or triennial FCT tightness testing) is not being performed at least weekly. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the records/results of) four weekly leak tests, or install/utilize (and submit documentation of) a valid leak detection method. » *Additional Action(s):* There is no need for the curative measure if the most recent weekly leak test was performed but a previous one was not; this violation, however, should still be cited.
ATGF_ldr	***Are the LD records being retained?*** ***Note: records must be retained for 3 years.***
Y	» No issues were found under this question.
NR ***[SP2/SP5]***	» *613-2.3(g)(1) / 5.3(a):* Leak tests are not being recorded, or records are not being retained for at least three years. » *Note(s):* Test records are the primary evidence that automatic tank gauging is being performed; if the records are missing, tank gauging is likely not being performed (and Response **NL** under Question **ATGF_ld** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records/results of the last four weekly leak tests, or perform (and submit the records/results of) four weekly leak tests.

ATGF_gwo	Is the equipment in good working order?
Y	» No issues were found under this question.
IM ***[SP2/SP5]***	» *613-2.3(c)(4)(iii) / 2.3(e)(2)(i) / 2.3(e)(2)(ii) / 5.3(a):* The automatic tank gauging system is not set up correctly to conduct leak tests (e.g., using an incorrect tank capacity or dimensions), or leak tests are not being performed for the appropriate duration. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must properly calibrate the automatic tank gauging system and perform (and submit the records/results of) three weekly leak tests with the corrected setup.
PLL ***[SP2/SP5]***	» *613-2.3(c)(4)(i) / 5.3(a):* Leak tests are being performed when the petroleum level in the tank is lower than what is routinely stored. » *Note(s):* Test records should be reviewed to determine petroleum levels when the tests were performed. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must program the automatic tank gauging system to perform leak tests when the tank is filled (to its normal levels), and perform (and submit the records/results of) leak tests at these levels. » *Additional Action(s):* Tests should be conducted as soon as possible after deliveries; if the tank receives infrequent deliveries, the inspector should review records for tests performed when the tank had its highest levels of petroleum.
O	» *613-1.12 / 2.3(c)(4)(iii) / 2.3(e)(2)(i) / 2.3(e)(2)(ii) / 5.3(a):* The automatic tank gauging system is inoperable, but would otherwise meet standards. » *Note(s):* The automatic tank gauging system is considered inoperable if any of the following is true: - the probe/float is malfunctioning; - the console is shown to be defective or unpowered; or - the console and the probe/float do not have a connection, per the latest results of either the monthly connectivity inspections (for SP2/SP3/SP5 UST systems) or the annual operability inspections (for SP2/SP5 UST systems). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must repair or replace the automatic tank gauging system, and submit documentation proving that the system has been repaired/replaced and that weekly leak tests are being conducted. » *Additional Action(s):* Automatic tank gauging is likely not being performed if the system is inoperable (see Question **ATGF_Id**, Response **NL**).
NX	» *613-1.4(b):* The automatic tank gauging system could not be accessed for inspection (e.g., the console is in a locked room). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must submit documentation showing that the automatic tank gauging system is present and in good working order/properly configured. » *Additional Action(s):* The inspector should perform a follow-up inspection to confirm that the automatic tank gauging system is set up properly and that leak tests are being performed.

ATGF_itm	***Is the equipment being inspected periodically?*** ***Note: connectivity inspections are required for all UST systems [SP2/SP3/SP5]. Operability inspections are required for federally regulated UST systems [SP2/SP5].***
Y	» No issues were found under this question.
NC ***[SP2/SP5]***	» *613-2.2(g)(1) / 5.2(g):* Connectivity inspections are not being performed for the automatic tank gauging system. » *Note(s):* Inspection records are the primary evidence that connectivity inspections are being performed; if inspections are being performed, but either the inspections are not being recorded or records are not being retained for at least three years, Response **NRC** under Question **ATGF_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) a connectivity inspection.
PC ***[SP2/SP5]***	» *613-2.2(g)(1) / 5.2(g):* Connectivity inspections are not being performed for the automatic tank gauging system at least every 30 days. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) a connectivity inspection.
NO ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(a) – (b) / 5.2(g):* Operability inspections are not being performed for the automatic tank gauging system. » *Note(s):* Inspection records are the primary evidence that operability inspections are being performed; if inspections are being performed, but either the inspections are not being recorded or records are not being retained for at least three years, Response **NRO** under Question **ATGF_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection.
PO ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(a) – (b) / 5.2(g):* Operability inspections are not being performed for the automatic tank gauging system at least annually. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection.
ATGF_rec	***Are the equipment inspection records being retained?*** ***Note: records must be retained for 3 years.***
Y	» No issues were found under this question.
NRC ***[SP2/SP5]***	» *613-2.2(g)(1) / 2.2(g)(3) / 5.2(g):* Connectivity inspections are not being recorded, or records are not being retained for at least three years. » *Note(s):* Inspection records are the primary evidence that connectivity inspections are being performed; if the records are missing, inspections are likely not being performed (and Response **NC** under Question **ATGF_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records of the last three connectivity inspections, or perform (and submit the records of) a connectivity inspection.
NRO ***[SP2/SP5]***	» *613-2.2(g)(2) / 2.2(g)(3) / 5.2(g):* Operability inspections are not being recorded, or records are not being retained for at least three years. » *Note(s):* Inspection records are the primary evidence that operability inspections are being performed; if the records are missing, inspections are likely not being performed (and Response **NO** under Question **ATGF_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records of the last operability inspection, or perform (and submit the records of) an operability inspection.

ATGF_com	Was the equipment (operability) inspection complete/adequate?
Y	» No issues were found under this question.
AL ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(a) – (b) / 5.2(g):* The console alarm was not verified to trigger (when a failed leak test is simulated) as part of the operability inspections. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection and include the alarm in the inspection.
CF ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(a) / 5.2(g):* The automatic tank gauging system configuration was not verified as part of the operability inspections. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection and include the leak rate/tank system configuration in the inspection.
BA ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(a) / 5.2(g):* The (console) battery backup was not verified to have power as part of the operability inspections. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection and include the battery backup in the inspection.
FL ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(b) / 5.2(g):* Floats were not inspected for free movement as part of the operability inspections. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection and include the float(s) in the inspection.
CN ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(b) / 5.2(g):* Probe/float readings (as read through the console) were not verified to match actual petroleum levels in the tank, as part of the operability inspections. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection and include the console communication in the inspection.

VMTF	Vapor Monitoring w/ Tracer (FCTs)
VMTF_val	**Is this LD method valid for the tank system?** **Note: vapor monitoring w/ tracer (FCTs) is a valid (primary) LD method only for SP2 (or SP5): Cat. 1/2 field-constructed USTs with a design capacity greater than 50,000 gallons; and piping associated with field-constructed USTs with a design capacity greater than 50,000 gallons.**
Y	» No issues were found under this question.
NVT	» *613-2.3(b)(1) / 3.3(b)(1) / 4.3(b)(1) / 5.3(a) / 5.3(b):* FCT vapor monitoring (using a tracer compound) is not a valid leak detection method for the tank (and there are no other valid leak detection methods in use). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid leak detection method.
LRT [SP2/SP5]	» *613-2.3(e)(3) / 5.3(a):* The FCT vapor monitoring method cannot be shown to detect a leak at the rate of 0.1 gph. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a tank tightness test within 30 calendar days after the date of the NOV.
SMT	» FCT vapor monitoring (using a tracer compound) either is not required for the tank or supplements a different LD method that is being used to meet leak detection requirements.
NVP	» *613-2.3(b)(2) / 3.3(b)(2) / 4.3(b)(2) / 5.3(a) / 5.3(b):* FCT vapor monitoring (using a tracer compound) is not a valid leak detection method for the piping (and there are no other valid leak detection methods in use). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid leak detection method.
LRP [SP2/SP5]	» *613-2.3(f)(2) / 5.3(a):* The FCT vapor monitoring method cannot be shown to detect a leak at the rate of 0.1 gph. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a line tightness test within 30 calendar days after the date of the NOV.
SMP	» FCT vapor monitoring (using a tracer compound) either is not required for the piping or supplements a different LD method that is being used to meet leak detection requirements.

VMTF_Id	***Is the LD method being performed periodically?***
Y	» No issues were found under this question.
NLT ***[SP2/SP5]***	» *613-2.3(b)(1)(i)(b) / 2.3(b)(1)(ii)(b) / 2.3(e)(3) / 5.3(a):* FCT vapor monitoring (using a tracer compound) is not being performed for the tank. » *Note(s):* Sampling records are the primary evidence that FCT vapor monitoring is being performed; if monitoring is being performed, but either sampling is not being recorded or records are not being retained for at least three years, Response **NR** under Question **VMTF_Idr** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the records of) an annual sampling, or install/utilize (and submit documentation of) a valid leak detection method.
PLT ***[SP2/SP5]***	» *613-2.3(b)(1)(i)(b) / 2.3(b)(1)(ii)(b) / 2.3(e)(3) / 5.3(a):* FCT vapor monitoring (using a tracer compound) is not being performed for the tank at least annually. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the records of) an annual sampling, or install/utilize (and submit documentation of) a valid leak detection method.
NLP ***[SP2/SP5]***	» *613-2.3(b)(2)(iii) / 2.3(f)(2) / 5.3(a):* FCT vapor monitoring (using a tracer compound) is not being performed for the piping. » *Note(s):* Sampling records are the primary evidence that FCT vapor monitoring is being performed; if monitoring is being performed, but either sampling is not being recorded or records are not being retained for at least three years, Response **NR** under Question **VMTF_Idr** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the records of) an annual sampling, or install/utilize (and submit documentation of) a valid leak detection method.
PLP ***[SP2/SP5]***	» *613-2.3(b)(2)(iii) / 2.3(f)(2) / 5.3(a):* FCT vapor monitoring (using a tracer compound) is not being performed for the piping at least annually. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the records of) an annual sampling or install/utilize (and submit documentation of) a valid leak detection method.
VMTF_Idr	***Are the LD records being retained?*** ***Note: records must be retained for 3 years.***
Y	» No issues were found under this question.
NR ***[SP2/SP5]***	» *613-2.3(g)(1) / 5.3(a):* FCT vapor monitoring (using a tracer compound) is not being recorded, or records are not being retained for at least three years. » *Note(s):* Sampling records are the primary evidence that FCT vapor monitoring is being performed; if the records are missing, monitoring is likely not being performed (and Response **NLT**/**NLP** under Question **VMTF_Id** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records of the last four weekly samplings, or perform (and submit the records of) four weekly samplings.

VMTF_gwo	*Is the equipment in good working order?*
Y	» No issues were found under this question.
WDT ***[SP2/SP5]***	» *613-2.3(c)(5)(vi) / 2.3(e)(3) / 5.3(a):* The site assessment report does not indicate that the wells either meet all design standards or will detect leaks from all portions of the tank system. » *Note(s):* Note that Response **VWT** should be selected instead if it better describes individual issues found with the wells. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a tank tightness test within 30 calendar days after the date of the NOV.
VWT ***[SP2/SP5]***	» *613-2.3(c)(5)(iii) / 2.3(e)(3) / 5.3(a):* The site assessment report does not indicate that the vapor monitoring wells are never affected by groundwater, rainfall, soil moisture, etc. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a tank tightness test within 30 calendar days after the date of the NOV.
WDP ***[SP2/SP5]***	» *613-2.3(c)(5)(vi) / 2.3(f)(2) / 5.3(a):* The site assessment report does not indicate that the wells either meet all design standards or will detect leaks from all portions of the tank system. » *Note(s):* Note that Response **VWP** should be selected instead if it better describes individual issues found with the wells. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a line tightness test within 30 calendar days after the date of the NOV.
VWP ***[SP2/SP5]***	» *613-2.3(c)(5)(iii) / 2.3(f)(2) / 5.3(a):* The site assessment report does not indicate that the vapor monitoring wells are never affected by groundwater, rainfall, soil moisture, etc. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a line tightness test within 30 calendar days after the date of the NOV.

VMTF_itm	***Is the equipment being inspected periodically?*** ***Note: connectivity inspections are required for all UST systems [SP2/SP3/SP5]. Operability inspections are required for federally regulated UST systems [SP2/SP5].***
Y	» No issues were found under this question.
NC ***[SP2/SP5]***	» *613-2.2(g)(1) / 5.2(g):* Connectivity inspections are not being performed for the vapor monitoring system. » *Note(s):* Inspection records are the primary evidence that connectivity inspections are being performed; if inspections are being performed, but either the inspections are not being recorded or records are not being retained for at least three years, Response **NRC** under Question **VMTF_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) a connectivity inspection.
PC ***[SP2/SP5]***	» *613-2.2(g)(1) / 5.2(g):* Connectivity inspections are not being performed for the vapor monitoring system at least every 30 days. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) a connectivity inspection.
XPC ***[SP2/SP5]***	» Connectivity inspections are not required because vapor monitoring (using a tracer compound) is performed with non-electronic equipment.
NO ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(a) / 2.2(g)(2)(ii)(b) / 2.2(g)(2)(ii)(e) / 5.2(g):* Operability inspections are not being performed for the vapor monitoring equipment. » *Note(s):* Inspection records are the primary evidence that operability inspections are being performed; if inspections are being performed, but either the inspections are not being recorded or records are not being retained for at least three years, Response **NRO** under Question **VMTF_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection.
PO ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(a) / 2.2(g)(2)(ii)(b) / 2.2(g)(2)(ii)(e) / 5.2(g):* Operability inspections are not being performed for the vapor monitoring equipment at least annually. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection.

VMTF_rec	Are the equipment inspection records being retained? Note: records must be retained for 3 years.
Y	» No issues were found under this question.
NRC [SP2/SP5]	» *613-2.2(g)(1) / 2.2(g)(3) / 5.2(g):* Connectivity inspections are not being recorded, or records are not being retained for at least three years. » *Note(s):* Inspection records are the primary evidence that connectivity inspections are being performed; if the records are missing, inspections are likely not being performed (and Response **NC** under Question **VMTF_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records of the last three connectivity inspections, or perform (and submit the records of) a connectivity inspection.
NRO [SP2/SP5]	» *613-2.2(g)(2) / 2.2(g)(3) / 5.2(g):* Operability inspections are not being recorded, or records are not being retained for at least three years. » *Note(s):* Inspection records are the primary evidence that operability inspections are being performed; if the records are missing, inspections are likely not being performed (and Response **NO** under Question **VMTF_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records of the last operability inspection, or perform (and submit the records of) an operability inspection.
VMTF_com	Was the equipment (operability) inspection complete/adequate?
Y	» No issues were found under this question.
AL [SP2/SP5]	» *613-2.2(g)(2)(ii)(a) – (b) / 5.2(g):* The console alarm was not verified to trigger (when a failed leak test is simulated) as part of the operability inspections. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection and include the alarm in the inspection.
CF [SP2/SP5]	» *613-2.2(g)(2)(ii)(a) / 5.2(g):* The automatic tank gauging system configuration was not verified as part of the operability inspections. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection and include the leak rate/tank system configuration in the inspection.
BA [SP2/SP5]	» *613-2.2(g)(2)(ii)(a) / 5.2(g):* The (console) battery backup was not verified to have power as part of the operability inspections. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection and include the battery backup in the inspection.
FL [SP2/SP5]	» *613-2.2(g)(2)(ii)(b) / 5.2(g):* Floats were not inspected for free movement as part of the operability inspections. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection and include the float(s) in the inspection.
CN [SP2/SP5]	» *613-2.2(g)(2)(ii)(b) / 5.2(g):* Probe/float readings (as read through the console) were not verified to match actual petroleum levels in the tank, as part of the operability inspections. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection and include the console communication in the inspection.

VMTF_mis	*Are there any other observed violations?*
SAT ***[SP2/SP5]***	» *613-2.3(c)(5)(vi) / 2.3(c)(6)(vii) / 2.3(e)(3) / 5.3(a):* A site assessment was not performed for the (tank) excavation zone prior to the use of vapor monitoring (using a tracer compound). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform a site assessment and submit a copy of the report. » *Additional Action(s):* If the assessment report indicates that the monitoring wells do not meet standards, another form of leak detection will need to be utilized.
PET ***[SP2/SP5]***	» *613-2.3(c)(5)(vi) / 2.3(c)(6)(vii) / 2.3(e)(3) / 5.3(a):* The site assessment report was developed after October 13, 2015 but was not signed by a NYS-licensed/registered professional engineer/geologist. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either obtain a signoff from a NYS-licensed/registered professional engineer/geologist, or perform a site assessment and submit a copy of the report. » *Additional Action(s):* If the assessment report indicates that the monitoring wells do not meet standards, another form of leak detection will need to be utilized.
NRT ***[SP2/SP5]***	» *613-2.3(e)(3) / 2.3(g)(4) / 5.3(a):* The site assessment report is not being retained for at least as long as vapor monitoring (using a tracer compound) is used as a (tank) leak detection method. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform a site assessment and submit a copy of the report. » *Additional Action(s):* If the assessment report indicates that the monitoring wells do not meet standards, another form of leak detection will need to be utilized.
SAP ***[SP2/SP5]***	» *613-2.3(c)(5)(vi) / 2.3(c)(6)(vii) / 2.3(f)(2) / 5.3(a):* A site assessment was not performed for the (piping) excavation zone prior to the use of vapor monitoring (using a tracer compound). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform a site assessment and submit a copy of the report. » *Additional Action(s):* If the assessment report indicates that the monitoring wells do not meet standards, another form of leak detection will need to be utilized.
PEP ***[SP2/SP5]***	» *613-2.3(c)(5)(vi) / 2.3(c)(6)(vii) / 2.3(f)(2) / 5.3(a):* The site assessment report was developed after October 13, 2015 but was not signed by a NYS-licensed/registered professional engineer/geologist. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either obtain a signoff from a NYS-licensed/registered professional engineer/geologist, or perform a site assessment and submit a copy of the report. » *Additional Action(s):* If the assessment report indicates that the monitoring wells do not meet standards, another form of leak detection will need to be utilized.
NRP ***[SP2/SP5]***	» *613-2.3(f)(2) / 2.3(g)(4) / 5.3(a):* The site assessment report is not being retained for at least as long as vapor monitoring (using a tracer compound) is used as a (piping) leak detection method. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform a site assessment and submit a copy of the report. » *Additional Action(s):* If the assessment report indicates that the monitoring wells do not meet standards, another form of leak detection will need to be utilized.

INCF	Inventory Control (FCTs)
INCF_val	**Is this LD method valid for the tank system?** ***Note: inventory control is a valid LD method only for SP2 (or SP5): Cat. 1/2 field-constructed USTs with a design capacity greater than 50,000 gallons; and piping associated with field-constructed USTs with a design capacity greater than 50,000 gallons. (This method must be used in conjunction with either vapor/groundwater monitoring or tightness testing of the FCT/bulk piping to be acceptable.)***
Y	» No issues were found under this question.
NVT	» *613-2.3(b)(1) / 3.3(b)(1) / 4.3(b)(1) / 5.3(a) / 5.3(b):* Inventory control (with weekly vapor/groundwater monitoring or annual FCT tightness testing) is not a valid leak detection method for the tank (and there are no other valid leak detection methods in use). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid leak detection method.
SMT	» Inventory control either is not required for the tank or supplements a different LD method that is being used to meet leak detection requirements.
NVP	» *613-2.3(b)(2) / 3.3(b)(2) / 4.3(b)(2) / 5.3(a) / 5.3(b):* Inventory control (with weekly vapor/groundwater monitoring or annual/semiannual bulk piping tightness testing) is not a valid leak detection method for the piping (and there are no other valid leak detection methods in use). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid leak detection method.
SMP	» Inventory control either is not required for the piping or supplements a different LD method that is being used to meet leak detection requirements.
INCF_ld	**Is the LD method being performed periodically?**
Y	» No issues were found under this question.
NLT [SP2/SP5]	» *613-2.3(b)(1)(i)(b) / 2.3(b)(1)(ii)(b) / 2.3(e)(4)(i) / 5.3(a):* Inventory control measurements are not being reconciled for the tank. » *Note(s):* Reconciliation records are the primary evidence that inventory control is being performed; if inventory control is being performed, but records are not being retained for at least three years, Response **NRT** under Question **INCF_ldr** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the records/results of) inventory control for 30 days, or install/utilize (and submit documentation of) a valid leak detection method.
PLT [SP2/SP5]	» *613-2.3(b)(1)(i)(b) / 2.3(b)(1)(ii)(b) / 2.3(e)(4)(i) / 5.3(a):* Inventory control measurements are not being reconciled for the tank at least every 30 days. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the records/results of) inventory control for 30 days, or install/utilize (and submit documentation of) a valid leak detection method.
NLP [SP2/SP5]	» *613-2.3(b)(2)(iii) / 2.3(f)(3)(i) / 5.3(a):* Inventory control measurements are not being reconciled for the piping. » *Note(s):* Reconciliation records are the primary evidence that inventory control is being performed; if inventory control is being performed, but records are not being retained for at least three years, Response **NRP** under Question **INCF_ldr** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the records/results of) inventory control for 30 days, or install/utilize (and submit documentation of) a valid leak detection method.
PLP [SP2/SP5]	» *613-2.3(b)(2)(iii) / 2.3(f)(3)(i) / 5.3(a):* Inventory control measurements are not being reconciled for the piping at least every 30 days. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the records/results of) inventory control for 30 days or install/utilize (and submit documentation of) a valid leak detection method.

INCF_ldr	***Are the LD records being retained?*** ***Note: records must be retained for 3 years.***
Y	» No issues were found under this question.
NRT ***[SP2/SP5]***	» *613-2.3(g)(1) / 5.3(a):* Inventory control measurements are not being recorded for each operating day, or records are not being retained (for the tank) for at least three years. » *Note(s):* Reconciliation records are the primary evidence that inventory control is being performed; if the records are missing, inventory control is likely not being performed (and Response **NLT** under Question **INCF_ld** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the inventory control records for the last 30 days, or perform (and submit the records/results of) inventory control for 30 days.
NRP ***[SP2/SP5]***	» *613-2.3(g)(1) / 5.3(a):* Inventory control measurements are not being recorded for each operating day, or records are not being retained (for the piping) for at least three years. » *Note(s):* Reconciliation records are the primary evidence that inventory control is being performed; if the records are missing, inventory control is likely not being performed (and Response **NLP** under Question **INCF_ld** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the inventory control records for the last 30 days, or perform (and submit the records/results of) inventory control for 30 days.
INCF_ldc	***Was the reconciliation complete/adequate?***
Y	» No issues were found under this question.
NWMT ***[SP2/SP5]***	» *613-2.3(e)(4)(i) / 5.3(a):* Water levels are not being recorded as part of the inventory control measurements for the tank. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records/results of) inventory control for 30 days and include the corresponding the tank bottom water measurements.
IMT ***[SP2/SP5]***	» *613-2.3(e)(4)(i) / 5.3(a):* Inventory control measurements are not being reconciled properly for the tank. » *Note(s):* This includes: - not having ten calendar days per reconciliation interval - not performing reconciliation at least every ten days; not including each calendar day in at least one interval - having different measurements for the same operating day (when in overlapping reconciliation intervals) » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records/results of) inventory control properly for the last 30 days.
NWMP ***[SP2/SP5]***	» *613-2.3(f)(3)(i) / 5.3(a):* Water levels are not being recorded as part of the inventory control measurements for the piping. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records/results of) inventory control for 30 days and include the corresponding the piping water measurements.
IMP ***[SP2/SP5]***	» *613-2.3(f)(3)(i) / 5.3(a):* Inventory control measurements are not being reconciled properly for the piping. » *Note(s):* This includes: - not having ten calendar days per reconciliation interval - not performing reconciliation at least every ten days; not including each calendar day in at least one interval - having different measurements for the same operating day (when in overlapping reconciliation intervals) » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records/results of) inventory control properly for the last 30 days.

INCF_gwo	Is the equipment in good working order?
Y	» No issues were found under this question.
8M	» *613-1.12 / 2.3(e)(4)(i) / 2.3(f)(3)(i) / 5.3(a):* The inventory control equipment is not accurate to 1/8” (over the full range of the tank system component's height). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must submit documentation showing that equipment capable of accurate measurement is in use.
TC	» *613-1.12 / 2.3(e)(4)(i) / 2.3(f)(3)(i) / 5.3(a):* The dispenser meter (i.e., totalizer) is not properly calibrated. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must properly calibrate the totalizer and perform (and submit the records/results of) inventory control for 30 days with the properly calibrated meter.

WHM	Weep Hole Monitoring
WHM_val	**Is this LD method valid for the tank system?** ***Note: weep hole monitoring is a valid (primary) LD method only for SP3 (or SP5), Cat. 1 USTs/UST systems.***
Y	» No issues were found under this question.
NV	» *613-2.3(b)(1) / 3.3(b)(1) / 4.3(b)(1) / 5.3(a) / 5.3(b):* Weep hole monitoring is not a valid leak detection method for the tank (and there are no other valid leak detection methods in use). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid leak detection method.
SM	» Weep hole monitoring either is not required for the tank or supplements a different LD method that is being used to meet leak detection requirements.
WHM_ld	**Is the LD method being performed periodically?**
Y	» No issues were found under this question.
NL ***[SP3/SP5]***	» *613-3.3(b)(1)(i)(c) / 5.3(b):* Weep hole monitoring is not being performed. » *Note(s):* Monitoring records are the primary evidence that weep hole monitoring is being performed; if monitoring is being performed, but either the monitoring is not being recorded or records are not being retained for at least three years, Response **NR** under Question **WHM_ldr** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the records of) weep hole monitoring for four weeks, or install/utilize (and submit documentation of) a valid leak detection method.
PL ***[SP3/SP5]***	» *613-3.3(b)(1)(i)(c) / 5.3(b):* Weep hole monitoring is not being performed at least weekly. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the records of) weep hole monitoring for four weeks, or install/utilize (and submit documentation of) a valid leak detection method. » *Additional Action(s):* There is no need for the curative measure if the most recent weekly monitoring was performed but a previous one was not; this violation, however, should still be cited.

WHM_ldr	***Are the LD records being retained?*** ***Note: records must be retained for 3 years.***
Y	» No issues were found under this question.
NR ***[SP3/SP5]***	» *613-3.3(e)(1) / 5.3(b):* Weep hole monitoring is not being recorded, or records are not being retained for at least three years. » *Note(s):* Monitoring records are the primary evidence that weep hole monitoring is being performed; if the records are missing, weep hole monitoring is likely not being performed (and Response **NL** under Question **WHM_ld** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the monitoring records for the last four weeks, or perform (and submit the records of) weep hole monitoring for four weeks.
WHM_gwo	***Is the equipment in good working order?***
Y	» No issues were found under this question.
NV ***[SP3/SP5]***	» *613-3.3(c)(6) / 5.3(b):* The weep holes are not visible to an observer. » *Note(s):* A spill may still be observed through the weep holes, but it may not be readily identified during weekly monitoring because the weep holes are either visually obstructed/covered by materials or inaccessible. » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must either (for visually obstructed weep holes) remove all obstructions in the area and submit a photograph showing the cleared area, or (for inaccessible weep holes) within 30 calendar days after the date of the NOV, submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a tank tightness test within 30 calendar days after the date of the NOV. » *Additional Action(s):* Weep holes are likely not being monitored if the weep holes are either visually obstructed or inaccessible (see Question **WHM_ld**, Response **NL**).
OB	» *613-1.12 / 3.3(c)(6) / 5.3(b):* The weep holes are either temporarily blocked or permanently obstructed, and leaks would not be observed through the weep hole. » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must either unclog the temporarily blocked weep holes and submit a photograph showing the cleared weep hole, or (for permanently obstructed weep holes) within 30 calendar days after the date of the NOV, submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a tank tightness test within 30 calendar days after the date of the NOV. » *Additional Action(s):* Weep holes are likely not being monitored if the weep holes are either blocked or obstructed (see Question **WHM_ld**, Response **NL**).

TTT	Tank Tightness Testing
TTT_val	**Is this LD method valid for the tank system?**
Y	» No issues were found under this question.
NV	» *613-2.3(b)(1) / 3.3(b)(1) / 4.3(b)(1) / 5.3(a) / 5.3(b):* Tank tightness testing is not a valid leak detection method for the tank (and there are no other valid leak detection methods in use). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid leak detection method.
NW	» *613-2.3(c)(3)(i) / 3.3(c)(1)(i) / 4.3(c)(1)(i) / 5.3(a) / 5.3(b):* The tank tightness testing method cannot be shown to meet standards. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a tank tightness test within 30 calendar days after the date of the NOV.
SM	» Tank tightness testing either is not required for the tank or supplements a different LD method that is being used to meet leak detection requirements.
TTT_ld	**Is the LD method being performed periodically?**
Y	» No issues were found under this question.
NL *[SP3/SP4/SP5]*	» *613-3.3(b)(1)(i) / 4.3(b)(1)(i)(a) / 5.3(a) / 5.3(b):* Tank tightness testing is not being performed for the tank. » *Note(s):* Test results are the primary evidence that tightness testing is being performed; if testing is being performed, but either a copy of the test results was not submitted to the DEC within 30 days after the test, or test results are not being retained for the required minimum duration, Response **NR** or **NS** under Question **TTT_ldr** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the results of) a tank tightness test, or install/utilize (and submit documentation of) a valid leak detection method.
PL *[SP3/SP4/SP5]*	» *613-3.3(b)(1)(i) / 4.3(b)(1)(i)(a) / 5.3(a) / 5.3(b):* Tank tightness testing is not being performed for the tank at the required minimum frequency. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the results of) a tank tightness test, or install/utilize (and submit documentation of) a valid leak detection method. » *Additional Action(s):* There is no need for the curative measure if the most recent annual tightness test was performed but a previous one was not; this violation, however, should still be cited.

TTT_ldr	Are the LD records being retained? Note: records must be retained for 3 years or until the next test, whichever is later.
Y	» No issues were found under this question.
NR [SP3/SP4/SP5]	» *613-3.3(e)(2) / 4.3(e)(2) / 5.3(a) / 5.3(b):* Tank tightness test results are not being retained (for the tank) for the required minimum duration. » *Note(s):* Test results are the primary evidence that tightness testing is being performed; if test results cannot be produced AND copies were not submitted to the DEC within 30 days after the test, tightness testing is likely not being performed (and Response **NL** under Question **TTT_ld** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the results of the last test, or perform (and submit the results of) a tank tightness test.
NS [SP3/SP4/SP5]	» *613-3.3(e)(3) / 4.3(e)(3) / 5.3(a) / 5.3(b):* A copy of the tank tightness test results was not submitted to the DEC within 30 days after the test was performed. » *Note(s):* Test results are the primary evidence that tightness testing is being performed; if test results cannot be produced AND copies were not submitted to the DEC within 30 days after the test, tightness testing is likely not being performed (and Response **NL** under Question **TTT_ld** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the results of the last test, or perform (and submit the results of) a tank tightness test.
TTT_ldc	**Was the testing complete/adequate?**
Y	» No issues were found under this question.
IN [SP3/SP4/SP5]	» *613-3.3(e)(2) / 4.3(e)(2) / 5.3(a) / 5.3(b):* The tank tightness test results do not have all of the required information. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a tank tightness test and include all required information.
QT [SP3/SP4/SP5]	» *613-3.3(c)(1)(ii) / 4.3(c)(1)(ii) / 5.3(a) / 5.3(b):* The tank tightness test was not performed by a qualified technician. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a tank tightness test.

IMP	Impermeable Barrier/Double-Bottom Monitoring
IMP_note	Impermeable barrier (or double-bottom) monitoring is a leak detection method that is covered under the 30-day walkthrough inspections for ASTs. Note any violations for this LD method in Walkthrough Inspections.

INR	Internal Tank Inspections
INR_val	**Is this LD method valid for the tank system?** **Note: internal inspections every ten years are required for certain SP4 (or SP5), Cat. 1 ASTs. See 613-4.3(b)(1)(i)(a) for restrictions; and 613-4.3(b)(1)(i)(b) for exemptions.**
Y	» No issues were found under this question.
NV	» *613-2.3(b)(1) / 3.3(b)(1) / 4.3(b)(1) / 5.3(a) / 5.3(b):* Internal tank inspections are not a valid leak detection method for the tank (and there are no other valid leak detection methods in use). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid leak detection method.
IIS [SP4/SP5]	» *613-4.3(c)(2) / 5.3(a) / 5.3(b):* The internal inspection was not performed in accordance with an appropriate code of practice. » *Note(s):* Shop-fabricated tanks should be inspected to STI SP001, while field-fabricated tanks should be inspected to API 653. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to perform (and submit the records of) an internal tank inspection within 90 days after the date of the NOV.
SM	» Internal inspection either is not required for the tank or supplements a different LD method that is being used to meet leak detection requirements.
INR_ld	**Is the LD method being performed periodically?**
Y	» No issues were found under this question.
NL [SP4/SP5]	» *613-4.3(b)(1)(i)(a) / 5.3(a) / 5.3(b):* Internal tank inspections are not being performed. » *Note(s):* Inspection records are the primary evidence that internal tank inspections are being performed; if inspections are being performed, but records are not being retained for at least 20 years or until the inspection following the next inspection (whichever is later), Response **NR** under Question **INR_ldr** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to perform (and submit the records of) an internal tank inspection within 90 days after the date of the NOV.
PL [SP4/SP5]	» *613-4.3(b)(1)(i)(a) / 5.3(a) / 5.3(b):* Internal tank inspections are not being performed at least every ten years. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to perform (and submit the records of) an internal tank inspection within 90 days after the date of the NOV.
INR_ldr	**Are the LD records being retained?** **Note: records must be retained for 20 years or until the inspection following the next inspection, whichever is later.**
Y	» No issues were found under this question.
NR [SP4/SP5]	» *613-4.3(e)(1) / 5.3(a) / 5.3(b):* Internal tank inspection records are not being retained for at least 20 years or until the inspection following the next inspection (whichever is later). » *Note(s):* Inspection records are the primary evidence that internal tank inspections are being performed; if the records are missing, inspections are likely not being performed (and Response **NL** under Question **INR_ld** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records of the last inspection, or submit a plan to perform (and submit the records of) an internal tank inspection within 90 days after the date of the NOV.

INR_Idc	*Was the inspection complete/adequate?*
Y	» No issues were found under this question.
TI ***[SP4/SP5]***	» *613-4.3(c)(2) / 5.3(a) / 5.3(b):* Internal tank inspection records do not include the tank information. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the missing tank information, or submit a plan to perform (and submit the records of) an internal tank inspection within 60 days after the date of the NOV.
DT ***[SP4/SP5]***	» *613-4.3(c)(2) / 5.3(a) / 5.3(b):* Internal tank inspection records do not include the measurements taken during/calculations made as part of the inspection. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the missing measurements/calculations, or submit a plan to perform (and submit the records of) an internal tank inspection within 60 days after the date of the NOV.
IA ***[SP4/SP5]***	» *613-4.3(c)(2) / 5.3(a) / 5.3(b):* Internal tank inspection records do not include the issues identified with the tank (or any actions that should be taken to address the issues). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the missing issues/recommendations, or submit a plan to perform (and submit the records of) an internal tank inspection within 60 days after the date of the NOV.
R ***[SP4/SP5]***	» *613-4.3(c)(2) / 5.3(a) / 5.3(b):* Internal tank inspection records do not include the results of the inspection. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the missing inspection results, or submit a plan to perform (and submit the records of) an internal tank inspection within 60 days after the date of the NOV.
ST ***[SP4/SP5]***	» *613-4.3(c)(2) / 5.3(a) / 5.3(b):* Internal tank inspection records do not identify the inspection standard followed. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the missing inspection standard, or submit a plan to perform (and submit the records of) an internal tank inspection within 60 days after the date of the NOV.
II ***[SP4/SP5]***	» *613-4.3(c)(2) / 5.3(a) / 5.3(b):* Internal tank inspection records do not include the tank inspector credentials/information. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the missing inspector information, or submit a plan to perform (and submit the records of) an internal tank inspection within 60 days after the date of the NOV.

ALLD	Automatic Line Leak Detector
ALLD_val	**Is this LD method valid for the tank system?** **Note: ALLDs are valid only for pressurized piping that is part of certain tank systems.**
Y	» No issues were found under this question.
NV	» *613-2.3(b)(2) / 3.3(b)(2) / 4.3(b)(2) / 5.3(a) / 5.3(b):* Automatic line leak detector is not a valid leak detection method for the piping (and there are no other valid leak detection methods in use). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid leak detection method.
NW	» *613-2.3(d)(1) / 3.3(d)(1) / 4.3(d)(1) / 5.3(a) / 5.3(b):* The automatic line leak detector cannot be shown to meet standards. » *Note(s):* This Response also includes any automatic line leak detector that is not designed for the petroleum stored in the tank system. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a line tightness test within 30 calendar days after the date of the NOV.
ALLD_gwo	**Is the equipment in good working order?**
Y	» No issues were found under this question.
AI	» *613-2.3(a)(1)(i) / 3.3(a)(1)(i) / 4.3(a)(1)(i) / 5.3(a) / 5.3(b):* The automatic line leak detector is positioned such that it would not detect a leak (from the downstream piping) if one were to occur. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either install an additional automatic line leak detector(s) or reinstall the existing ALLD such that entire piping system is monitored for leaks by the ALLD(s), and submit documentation that the ALLD(s) is properly installed relative to the piping configuration. In addition, the facility must perform (and submit the records of) an operability inspection within 30 calendar days after the date of the NOV.
AO	» *613-1.12 / 2.3(a)(1)(i) – (ii) / 3.3(a)(1)(i) – (ii) / 4.3(a)(1)(i) – (ii) / 5.3(a) / 5.3(b):* The automatic line leak detector is inoperable. » *Note(s):* The automatic line leak detector is considered inoperable if any of the following is true: - the ALLD is malfunctioning; - the ALLD is shown to be damaged or unpowered; - the console and the ELLD do not have a connection, per the latest results of either the monthly connectivity inspections (for SP2/SP3/SP5 UST systems) or the annual operability inspections (for SP2/SP5 UST systems); - the ALLD is not able to detect 3-gph leaks at 10 psi per the latest results of the annual operability inspections (for SP2 UST systems); or - the ALLD is placed incorrectly along the piping such that the ALLD cannot detect leaks from all portions of the piping. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must repair or replace (and submit repair/replacement documentation for) the automatic line leak detector, and perform (and submit the records of) an operability inspection.
NX	» *613-1.4(b):* The automatic line leak detector could not be accessed for inspection. » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must submit documentation that the automatic line leak detector is present and in good working order/properly installed.

ALLD_itm	***Is the equipment being inspected periodically?*** ***Note: connectivity inspections are required for all UST systems [SP2/SP3/SP5]. Operability inspections are required for federally regulated UST systems [SP2/SP5].***
Y	» No issues were found under this question.
NC ***[SP2/SP3/SP5]***	» *613-2.2(g)(1) / 3.2(g)(1) / 5.2(g):* Connectivity inspections are not being performed for the automatic line leak detector. » *Note(s):* Inspection records are the primary evidence that connectivity inspections are being performed; if inspections are being performed, but either the inspections are not being recorded or records are not being retained for at least three years, Response **NRC** under Question **ALLD_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) a connectivity inspection.
PC ***[SP2/SP3/SP5]***	» *613-2.2(g)(1) / 3.2(g)(1) / 5.2(g):* Connectivity inspections are not being performed for the automatic line leak detector at least every 30 days. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) a connectivity inspection.
XPC ***[SP2/SP3/SP5]***	» Connectivity inspections are not required because the automatic line leak detector is non-electronic.
NO ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(a) – (c) / 5.2(g):* Operability inspections are not being performed for the automatic line leak detector. » *Note(s):* Inspection records are the primary evidence that operability inspections are being performed; if inspections are being performed, but either the inspections are not being recorded or records are not being retained for at least three years, Response **NRO** under Question **ALLD_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection.
PO ***[SP2/SP5]***	» *613-2.2(g)(2)(ii)(a) – (c) / 5.2(g):* Operability inspections are not being performed for the automatic line leak detector at least annually. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an operability inspection.
ALLD_rec	***Are the equipment inspection records being retained?*** ***Note: records must be retained for 3 years (for pressurized piping that is part of SP2/SP3/SP5 UST systems).***
Y	» No issues were found under this question.
NRC ***[SP2/SP3/SP5]***	» *613-2.2(g)(1) / 2.2(g)(3) / 3.2(g)(1) / 3.2(g)(3) / 5.2(g):* Connectivity inspections are not being recorded, or records are not being retained for at least three years. » *Note(s):* Inspection records are the primary evidence that connectivity inspections are being performed; if the records are missing, inspections are likely not being performed (and Response **NC** under Question **ALLD_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records of the last three connectivity inspections, or perform (and submit the records of) a connectivity inspection.
NRO ***[SP2/SP5]***	» *613-2.2(g)(2) / 2.2(g)(3) / 5.2(g):* Operability inspections are not being recorded, or records are not being retained for at least three years. » *Note(s):* Inspection records are the primary evidence that operability inspections are being performed; if the records are missing, inspections are likely not being performed (and Response **NO** under Question **ALLD_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records of the last operability inspection, or perform (and submit the records of) an operability inspection.

BTTF	Bulk Piping Tightness Testing (FCTs)
BTTF_val	***Is this LD method valid for the tank system?*** ***Note: bulk piping tightness testing is a valid (primary) LD method only for SP2/SP4 (or SP5) piping associated with field-constructed tanks with a design capacity greater than 50,000 gallons.***
Y	» No issues were found under this question.
NV	» *613-2.3(b)(2) / 3.3(b)(2) / 4.3(b)(2) / 5.3(a) / 5.3(b):* Bulk piping tightness testing is not a valid leak detection method for the piping (and there are no other valid leak detection methods in use). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid leak detection method.
NW [SP2/SP4/SP5]	» *613-2.3(f)(1)(ii) / 2.3(f)(1)(iii) / 2.3(f)(3)(iii)(a) / 4.3(d)(3)(ii) / 4.3(d)(3)(iii) / 5.3(a) / 5.3(b):* The bulk piping tightness testing method cannot be shown to meet standards. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a bulk piping tightness test within 30 calendar days after the date of the NOV.
SM	» Bulk piping tightness testing either is not required for the piping or supplements a different LD method that is being used to meet leak detection requirements.
BTTF_ld	***Is the LD method being performed periodically?***
Y	» No issues were found under this question.
NL [SP2/SP4/SP5]	» *613-2.3(b)(2)(iii) / 2.3(f)(1)(i) / 2.3(f)(3)(iii)(a) / 4.3(b)(2)(iii) / 4.3(d)(3)(i) / 5.3(a) / 5.3(b):* Bulk piping tightness testing is not being performed for the piping. » *Note(s):* Test results are the primary evidence that tightness testing is being performed; if testing is being performed, but either a copy of the test results was not submitted to the DEC within 30 days after the test, or test results are not being retained for the required minimum duration, Response **NR** or **NS** under Question **BTTF_ldr** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the results of) a bulk piping tightness test, or install/utilize (and submit documentation of) a valid leak detection method.
PL [SP2/SP4/SP5]	» *613-2.3(b)(2)(iii) / 2.3(f)(1)(i) / 2.3(f)(3)(iii)(a) / 4.3(b)(2)(iii) / 4.3(d)(3)(i) / 5.3(a) / 5.3(b):* Bulk piping tightness testing is not being performed for the piping at least semiannually/annually. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the results of) a bulk piping tightness test, or install/utilize (and submit documentation of) a valid leak detection method. » *Additional Action(s):* There is no need for the curative measure if the most recent annual tightness test was performed but a previous one was not; this violation, however, should still be cited.

BTTF_ldr	***Are the LD records being retained?*** ***Note: records must be retained for 3 years or until the next test (whichever is later) for piping that is part of a SP2 (or SP5) UST system, and ten years or until the next test (whichever is later) for piping that is part of a SP4 (or SP5) AST system.***
Y	» No issues were found under this question.
NR [SP2/SP4/SP5]	» *613-2.3(g)(2) / 4.3(e)(2) / 5.3(a) / 5.3(b):* Bulk piping tightness test results are not being retained for the required minimum duration. » *Note(s):* Test results are the primary evidence that tightness testing is being performed; if test results cannot be produced AND copies were not submitted to the DEC within 30 days after the test, tightness testing is likely not being performed (and Response **NL** under Question **BTTF_ld** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the results of the last test, or perform (and submit the results of) a bulk piping tightness test.
NS [SP2/SP4/SP5]	» *613-2.3(g)(3) / 4.3(e)(3) / 5.3(a) / 5.3(b):* A copy of the bulk piping tightness test results was not submitted to the DEC within 30 days after the test was performed. » *Note(s):* Test results are the primary evidence that tightness testing is being performed; if test results cannot be produced AND copies were not submitted to the DEC within 30 days after the test, tightness testing is likely not being performed (and Response **NL** under Question **BTTF_ld** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the results of the last test, or perform (and submit the results of) a bulk piping tightness test.
BTTF_ldc	***Was the testing complete/adequate?***
Y	» No issues were found under this question.
IN [SP2/SP4/SP5]	» *613-2.3(g)(2) / 4.3(e)(2) / 5.3(a) / 5.3(b):* The bulk piping tightness test results do not have all of the required information. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a bulk piping tightness test and include all required information.
QT [SP2/SP4/SP5]	» *613-2.3(d)(2)(ii) / 2.3(f)(1)(i) / 2.3(f)(3)(iii)(a) / 4.3(d)(2)(ii) / 4.3(d)(3)(i) / 5.3(a) / 5.3(b):* The bulk piping tightness test was not performed by a qualified technician. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a bulk piping tightness test.

LTT	*Line Tightness Testing*
LTT_val	***Is this LD method valid for the tank system?*** ***Note: line tightness testing is a valid (piping) LD method only for certain piping Categories/pumping methods.***
Y	» No issues were found under this question.
NV	» *613-2.3(b)(2) / 3.3(b)(2) / 4.3(b)(2) / 5.3(a) / 5.3(b):* Line tightness testing is not a valid leak detection method for the piping (and there are no other valid leak detection methods in use). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid leak detection method.
NW	» *613-2.3(d)(2)(i) / 3.3(d)(2)(i) / 4.3(d)(2)(i) / 5.3(a) / 5.3(b):* The line tightness testing method cannot be shown to meet standards. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install/utilize a valid leak detection method within 60 days after the date of the NOV. In addition, the facility must perform (and submit the results of) a line tightness test within 30 calendar days after the date of the NOV.
SM	» Line tightness testing either is not required for the piping or supplements a different LD method that is being used to meet leak detection requirements.

LTT_Id	*Is the LD method being performed periodically?*
Y	» No issues were found under this question.
NLPP	» *613-2.3(b)(2)(i)(a)(2) / 2.3(b)(2)(i)(b)(2) / 3.3(b)(2)(i)(a)(2) / 4.3(b)(2)(i)(a)(1) / 5.3(a) / 5.3(b):* Line tightness testing is not being performed for the pressurized piping. » *Note(s):* Test results are the primary evidence that tightness testing is being performed; if testing is being performed, but either a copy of the test results was not submitted to the DEC within 30 days after the test, or test results are not being retained for the required minimum duration, Response **NR** or **NS** under Question **LTT_ldr** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the results of) a line tightness test, or install/utilize (and submit documentation of) a valid leak detection method.
PLPP	» *613-2.3(b)(2)(i)(a)(2) / 2.3(b)(2)(i)(b)(2) / 3.3(b)(2)(i)(a)(2) / 4.3(b)(2)(i)(a)(1) / 5.3(a) / 5.3(b):* Line tightness testing is not being performed for the pressurized piping at the required minimum frequency. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the results of) a line tightness test, or install/utilize (and submit documentation of) a valid leak detection method. » *Additional Action(s):* There is no need for the curative measure if the most recent annual tightness test was performed but a previous one was not; this violation, however, should still be cited.
NLSP	» *613-2.3(b)(2)(ii)(a) / 2.3(b)(2)(ii)(b) / 3.3(b)(2)(ii)(a) / 4.3(b)(2)(ii)(a)(1) / 5.3(a) / 5.3(b):* Line tightness testing is not being performed for (non-exempt) suction piping. » *Note(s):* Test results are the primary evidence that tightness testing is being performed; if testing is being performed, but either a copy of the test results was not submitted to the DEC within 30 days after the test, or test results are not being retained for the required minimum duration, Response **NR** or **NS** under Question **LTT_ldr** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the results of) a line tightness test, or install/utilize (and submit documentation of) a valid leak detection method.
PLSP	» *613-2.3(b)(2)(ii)(a) / 2.3(b)(2)(ii)(b) / 3.3(b)(2)(ii)(a) / 4.3(b)(2)(ii)(a)(1) / 5.3(a) / 5.3(b):* Line tightness testing is not being performed for (non-exempt) suction piping at the required minimum frequency. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either perform (and submit the results of) a line tightness test, or install/utilize (and submit documentation of) a valid leak detection method. » *Additional Action(s):* There is no need for the curative measure if the most recent annual/triennial tightness test was performed but a previous one was not; this violation, however, should still be cited.

LTT_ldr	***Are the LD records being retained?*** ***Note: records must be retained for 3 years or until the next test (whichever is later) for piping that is part of a SP2/SP3 (or SP5) UST system, and ten years or until the next test (whichever is later) for piping that is part of a SP4 (or SP5) AST system.***
Y	» No issues were found under this question.
NR	» *613-2.3(g)(2) / 3.3(e)(2) / 4.3(e)(2) / 5.3(a) / 5.3(b):* Line tightness test results are not being retained for the required minimum duration. » *Note(s):* Test results are the primary evidence that tightness testing is being performed; if test results cannot be produced AND copies were not submitted to the DEC within 30 days after the test, tightness testing is likely not being performed (and Response **NLPP**/**NLSP** under Question **LTT_ld** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the results of the last test, or perform (and submit the results of) a line tightness test.
NS	» *613-2.3(g)(3) / 3.3(e)(3) / 4.3(e)(3) / 5.3(a) / 5.3(b):* A copy of the line tightness test results was not submitted to the DEC within 30 days after the test was performed. » *Note(s):* Test results are the primary evidence that tightness testing is being performed; if test results cannot be produced AND copies were not submitted to the DEC within 30 days after the test, tightness testing is likely not being performed (and Response **NLPP**/**NLSP** under Question **LTT_ld** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the results of the last test, or perform (and submit the results of) a line tightness test.
LTT_ldc	***Was the testing complete/adequate?***
Y	» No issues were found under this question.
IN	» *613-2.3(g)(2) / 3.3(e)(2) / 4.3(e)(2) / 5.3(a) / 5.3(b):* The line tightness test results do not have all of the required information. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a line tightness test and include all required information.
QT	» *613-2.3(d)(2)(ii) / 3.3(d)(2)(ii) / 4.3(d)(2)(ii) / 5.3(a) / 5.3(b):* The line tightness test was not performed by a qualified technician. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a line tightness test.

Secondary Containment

Purpose

Secondary containment acts as the last line of defense in the event of a spill from any portion of the tank system that routinely contains petroleum. This is particularly important with regards to tank system components (i.e., tank, piping/ancillary equipment) in contact with the ground and dispensers, as portions of these equipment may not be readily visible to an operator, and petroleum may leak – and reach the lands and/or waters of the State (i.e., become a release) – through these nonvisible areas.

Requirements

The secondary containment requirements[393] for SP5 tank systems are affected by the modular nature of hydrant systems and the overlapping authorities afforded to DEC regarding their regulation of AST systems and UST systems. In general, aboveground tanks that are part of a SP5 UST system, as well as underground tanks that are part of a SP5 AST system, are subject to a different Subpart/set of secondary containment requirements than those normally applicable to the tank system as a whole:

Secondary Containment	***SP5 UST Systems***	***SP5 AST Systems***
Requirements Generally Applicable to the Tank System	*Tanks:* 6 NYCRR paragraph 613-**2.1(b)(1)** *Piping:* 6 NYCRR paragraph 613-**2.1(b)(2)** *Integrity Monitoring/Testing for Containment Sumps (used for interstitial monitoring of piping associated with underground tanks):* 6 NYCRR subdivision 613-2.2(f) *Dispenser Systems:* 6 NYCRR paragraph 613-5.1(b)(5)	*Tanks:* 6 NYCRR paragraph 613-**4.1(b)(1)** *Piping:* 6 NYCRR paragraph 613-**4.1(b)(2)**
Exceptions	*Field-constructed tanks with a design capacity greater than 50k gallons and associated piping, that are part of SP5 UST systems:* 6 NYCRR paragraphs 613-**2.1(c)(1), (2)** *Aboveground tanks that are part of SP5 UST systems:* 6 NYCRR paragraph 613-**4.1(b)(1)**	*Piping associated with field-constructed tanks with a design capacity greater than 50k gallons, that are part of SP5 AST systems:* 6 NYCRR paragraph 613-**4.1(c)(2)** *Underground tanks that are part of SP5 AST systems:* 6 NYCRR paragraph 613-**3.1(b)(1)**

The corresponding design/construction sections for the other Subparts will have more information regarding specific requirements and common issues:

- SP2: p. 139
- SP3: p. 243
- SP4: p. 323

[393] Secondary containment requirements for SP5 hydrant systems are (mostly) part of the design/construction requirements found in 6 NYCRR paragraphs 613-5.1(b)(1), (2).

Questions

SC_trc	***Tank SC Equipment: all SC equipment that apply to the tank – including those required and any supplementary equipment installed – should be selected.***
DWU	» Double-Walled (UST) Construction
VIA	» (Inaccessible) Vault
SL	» Synthetic Liner
EL	» Excavation Liner
IA	» Remote Impounding Area
DK	» Diking
VA	» (Accessible) Vault
TDWA	» Traditional Double-Walled (AST) Construction
MDWA	» Modified Double-Walled (AST) Construction
IU	» Impervious Underlayment
DB	» Double Bottom
O	» Other
NU ***[SP2/SP3/SP5]***	» *613-2.1(b)(1)(ii)(e) / 2.1(b)(1)(iii)(e) / 2.1(c)(1)(ii) / 2.1(c)(1)(iii) / 3.1(b)(1)(ii)(e) / 3.1(b)(1)(iii)(e) / 5.1(b)(1)(i) / 5.1(b)(1)(ii):* The tank is not equipped with the required secondary containment. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to permanently close the tank system within 60 days after the date of the NOV.
NA ***[SP4/SP5]***	» *613-4.1(b)(1)(i)(a)(2) / 4.1(b)(1)(ii)(c)(2) / 4.1(b)(1)(iii)(c)(2) / 5.1(b)(1)(i)(b) / 5.1(b)(1)(ii):* The tank is not equipped with the required (conventional) secondary containment, or alternatives are used in lieu of conventional secondary containment. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install secondary containment within 90 calendar days after the date of the NOV.
NAA ***[SP4/SP5]***	» *613-4.1(b)(1)(i)(a)(1) / 4.1(b)(1)(ii)(c)(1) / 4.1(b)(1)(iii)(c)(1) / 5.1(b)(1)(i)(b) / 5.1(b)(1)(ii):* The tank is not equipped with either (conventional) secondary containment or alternatives to secondary containment. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install either secondary containment or alternatives to secondary containment, within 90 calendar days after the date of the NOV.
NI ***[SP4/SP5]***	» *613-4.1(b)(1)(ii)(c)(3) / 4.1(b)(1)(iii)(c)(3) / 5.1(b)(1)(i)(b) / 5.1(b)(1)(ii):* The tank is neither underlain by an impermeable barrier or constructed with a double-bottom. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to either lift the tank on racks/cradles/stilts or install an impermeable barrier within 180 days after the date of the NOV.
ND ***[SP4/SP5]***	» *613-4.2(l) / 5.2(l):* There is no manually controlled valve on the discharge pipe of the AST secondary containment. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must install a dike drain valve on the discharge pipe and submit a photograph showing the (locked/closed) valve. » *Additional Action(s):* The absence of a drain valve on the discharge pipe likely indicates that the dike does not have integrity; the inspector is advised to investigate the area around the discharge pipe for signs of a release.
XTU ***[SP2/SP3/SP5]***	» Tank secondary containment is not required because the tank is a Cat. 1 UST.
XTA ***[SP4/SP5]***	» Tank secondary containment is not required because the AST has a capacity less than 10,000 gallons but is not within 500’ of a sensitive receptor.
XPI ***[SP4/SP5]***	» An impermeable barrier/double-bottom is not required because the AST is either a Cat. 1 tank or entirely aboveground (i.e., on racks/cradles/stilts).

XPD ***[SP4/SP5]***	» A dike drain valve is not required because there is no discharge pipe on the AST dike.
SC_tri	***Is the registered tank SC equipment accurate?***
Y	» No issues were found under this question.
IN	» *613-1.9(a)(4):* The registered tank secondary containment is inaccurate. » *Note(s):* This Response does not include expired facility registrations, inaccurate facility information, unregistered tanks, or unregistered facilities; such violations should be captured under Question **REG_info**. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must correct the site registration online to reflect the tank secondary containment. » *Additional Action(s):* The inspector should note the specific inaccuracy with the tank secondary containment under Question **SC_tnov**, to include it in the list of registration discrepancies (in the NOV) that need to be corrected.
SC_tnov	***Which tank SC equipment should be noted in the NOV?***
SC_prc	***Piping SC Equipment: all SC equipment that apply to the piping – including those required and any supplementary equipment installed – should be selected.***
DWU	» Double-Walled (Underground) Piping
TL	» Trench Liner
IA	» Remote Impounding Area
DK	» Diking
VA	» (Accessible) Vault
DWA	» Double-Walled (Aboveground) Piping
O	» Other
NP ***[SP2/SP5]***	» *613-2.1(b)(2)(iii)(c) / 2.1(c)(2)(iii) / 5.1(b)(2)(i):* The piping is not equipped with the required secondary containment. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to replace the piping (with double-walled piping) within 60 days after the date of the NOV.
NAE ***[SP2/SP5]***	» *613-2.1(b)(2)(iii)(c) / 5.1(b)(2)(i):* The ancillary equipment is not equipped with the required secondary containment. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to secondarily contain the ancillary equipment within 60 days after the date of the NOV.
XTP ***[SP2/SP5]***	» Piping secondary containment is not required because the piping either is not Cat. 3 piping that is part of a SP2/SP5 UST system or complies with alternative piping requirements.
XTS ***[SP2/SP5]***	» Piping secondary containment is not required because the piping is Cat. 3 safe suction piping.
XTA ***[SP2/SP5]***	» Ancillary equipment secondary containment is not required because the ancillary equipment is not Cat. 3 equipment that is part of a SP2/SP5 UST system.
NXC	» *613-1.4(b):* The (non-UDC) containment sump could not be accessed for inspection (e.g., locked/jammed sump cover, sump not designed to be accessed, no tool to remove sump lid). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must submit documentation showing that the containment sump is present and in good working order. » *Additional Action(s):* The inspector should conduct a follow-up inspection (where possible) to observe the containment sump rather than rely on installation documentation or photographs from the facility. Containment sumps associated with SP2/SP5 UST systems must allow for visual inspections.

SC_pri	Is the registered piping SC equipment accurate?
Y	» No issues were found under this question.
IN	» *613-1.9(a)(4):* The registered piping secondary containment is inaccurate. » *Note(s):* This Response does not include expired facility registrations, inaccurate facility information, unregistered tanks, or unregistered facilities; such violations should be captured under Question **REG_info**. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must correct the site registration online to reflect the piping secondary containment. » *Additional Action(s):* The inspector should note the specific inaccuracy with the piping secondary containment under Question **SC_pnov**, to include it in the list of registration discrepancies (in the NOV) that need to be corrected.
SC_pnov	**Which piping SC equipment should be noted in the NOV?**
SC_drc	**Does the dispenser have a UDC/dispenser sump?**
Y	» No issues were found under this question.
N [SP2/SP5]	» *613-2.1(b)(5) / 5.1(b)(5):* The dispenser is not equipped with the required under-dispenser containment. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install under-dispenser containment within 60 days after the date of the NOV.
XT [SP2/SP5]	» Under-dispenser containment is not required because the dispenser system is not new.
XTF [SP3/SP4/SP5]	» Under-dispenser containment is not required because the dispenser is not associated with a SP2/SP5 UST system.
NX	» *613-1.4(b):* The under-dispenser containment could not be accessed for inspection (e.g., locked/jammed dispenser, sump not designed to be accessed). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must submit documentation showing that the UDC is present and in good working order. » *Additional Action(s):* The inspector should conduct a follow-up inspection (where possible) to observe the UDC rather than rely on installation documentation or photographs from the facility. UDCs associated with SP2/SP5 UST systems must allow for visual inspections.
SC_dri	**Is the under-dispenser containment registration accurate?**
Y	» No issues were found under this question.
IN	» *613-1.9(a)(4):* The registered under-dispenser containment is inaccurate. » *Note(s):* This Response does not include expired facility registrations, inaccurate facility information, unregistered tanks, or unregistered facilities; such violations should be captured under Question **REG_info**. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must correct the site registration online to reflect the under-dispenser containment.
SC_val	**Is the equipment valid for the tank system?**
Y	» No issues were found under this question.
NVU [SP2/SP3/SP5]	» *613-2.1(b)(1)(ii)(e)(2) / 2.1(b)(1)(iii)(e)(2) / 2.1(b)(1)(iii)(e)(3) / 3.1(b)(1)(ii)(e)(2) / 3.1(b)(1)(iii)(e)(2) / 3.1(b)(1)(iii)(e)(3) / 5.1(b)(1)(i) / 5.1(b)(1)(ii):* The form of secondary containment is not valid for the tank (and there are no other valid forms of secondary containment in use). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to permanently close the tank system within 60 days after the date of the NOV.
NVP [SP2/SP5]	» *613-2.1(b)(2)(iii)(c)(2) / 5.1(b)(2)(i):* The piping is not double-walled. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to replace the piping (with double-walled piping) within 60 days after the date of the NOV.

SC_gwo	Is the equipment in good working order?
Y	» No issues were found under this question.
LIU ***[SP2/SP3/SP5]***	» *613-1.12 / 2.1(b)(1)(ii)(e)(1) / 2.1(b)(1)(iii)(e)(1) / 2.1(c)(1)(ii) / 2.1(c)(1)(iii) / 3.1(b)(1)(ii)(e)(1) / 3.1(b)(1)(iii)(e)(1) / 5.1(b)(1)(i) / 5.1(b)(1)(ii):* The tank secondary containment lacks integrity/is not liquid-tight. » *Note(s):* Evidence of integrity issues (for double-walled tank system components) includes: - presence of water (in the interstice); and - failed weekly interstitial monitoring results. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to permanently close the tank system within 60 days after the date of the NOV.
LIA ***[SP4/SP5]***	» *613-1.12 / 4.1(b)(1)(i)(a)(1) / 4.1(b)(1)(i)(a)(2)(i) – (ii) / 4.1(b)(1)(ii)(c)(1) / 4.1(b)(1)(ii)(c)(2)(i) – (ii) / 4.1(b)(1)(iii)(c)(1) / 4.1(b)(1)(iii)(c)(2)(i) – (ii) / 5.1(b)(1)(i)(b) / 5.1(b)(1)(ii):* The (conventional) tank secondary containment lacks integrity/is not liquid-tight. » *Note(s):* Evidence of integrity issues includes: - visible cracking; - degradation/erosion; - absence of water after a recent rain event; and - corrosion (for metal forms of secondary containment). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either repair or replace (and submit repair/replacement documentation for) the secondary containment.
WDA ***[SP4/SP5]***	» *613-1.12 / 4.1(b)(1)(i)(a)(1) / 4.1(b)(1)(i)(a)(2)(i) – (ii) / 4.1(b)(1)(ii)(c)(1) / 4.1(b)(1)(ii)(c)(2)(i) – (ii) / 4.1(b)(1)(iii)(c)(1) / 4.1(b)(1)(iii)(c)(2)(i) – (ii) / 5.1(b)(1)(i)(b) / 5.1(b)(1)(ii):* The (conventional) tank secondary containment area contains water and/or debris. » *Note(s):* Note that this violation excludes clay liners that require periodic hydration, as long as the water does not significantly reduce containment volume and does not damage (metallic portions) the secondary containment. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must clean the secondary containment area to be free of all liquids and debris, and submit a photograph showing the cleaned containment area.
IDA ***[SP4/SP5]***	» *613-4.1(b)(1)(i)(a)(1) / 4.1(b)(1)(i)(a)(2) / 4.1(b)(1)(ii)(c)(1) / 4.1(b)(1)(ii)(c)(2) / 4.1(b)(1)(iii)(c)(1) / 4.1(b)(1)(iii)(c)(2) / 5.1(b)(1)(i)(b) / 5.1(b)(1)(ii):* The (conventional) tank secondary containment is not adequately designed. » *Note(s):* Design issues include: - inability to contain all possible spills from the tank system; - insufficient containment volume/capacity; - incompatibility with the type of petroleum stored; - permeability; - excessive vegetation; and - wrong drain valve/control location. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit a plan to repair/reconfigure the secondary containment to meet design requirements within 60 calendar days after the date of the NOV, or install adequately designed secondary containment within 90 calendar days after the date of the NOV.

APR ***[SP4/SP5]***	» *613-4.1(b)(1)(i)(a)(1) / 4.1(b)(1)(ii)(c)(1) / 4.1(b)(1)(iii)(c)(1) / 5.1(b)(1)(i)(b) / 5.1(b)(1)(ii):* The alternatives to secondary containment do not address all possible (sources of) spills from the tank system. » *Note(s):* Possible types/sources of leaks include: - spills at the fill port from the delivery hose; - overfills from fill ports/vents; - leaks from valves, pumps, and other connections to the tank; - flow from valves left open by either accident or vandalism; - vandalism with ballistics; - vehicular traffic that could contact/rupture the tank; - fires that could weaken/rupture/overflow the tank; and - flooding/flotation. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either: submit a plan to repair/reconfigure the secondary containment to meet design requirements (or the alternatives to address all possible spills from the tank system) within 60 calendar days after the date of the NOV; or install adequately designed secondary containment (or alternatives to secondary containment) within 90 calendar days after the date of the NOV.
AMA ***[SP4/SP5]***	» *613-1.12 / 4.1(b)(1)(i)(a)(1) / 4.1(b)(1)(ii)(c)(1) / 4.1(b)(1)(iii)(c)(1) / 5.1(b)(1)(i)(b) / 5.1(b)(1)(ii):* The alternatives to secondary containment are inoperable. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either repair or replace (and submit repair/replacement documentation for) the alternatives to secondary containment.
LDO ***[SP4/SP5]***	» *613-4.1(b)(1)(ii)(c)(3)(i)(C) / 4.1(b)(1)(iii)(c)(3)(i)(C) / 5.1(b)(1)(i)(b) / 5.1(b)(1)(ii):* The bottom of the on-ground tank cannot be monitored for leaks. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either repair (and submit repair documentation for) the impermeable barrier to allow for leak monitoring, or submit a plan to either lift the tank on racks/cradles/stilts or install an impermeable barrier within 180 days after the date of the NOV.
DL ***[SP4/SP5]***	» *613-4.2(l) / 5.2(l):* The drain valve is not locked in a closed position. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must lock the dike drain valve in a closed position and submit a photograph showing the locked/closed valve.
LIP	» *613-1.12 / 2.1(b)(2)(iii)(c)(1) / 2.1(c)(2)(iii) / 5.1(b)(2)(i):* The piping secondary containment – excluding any sumps – lacks integrity/is not liquid-tight. » *Note(s):* Evidence of integrity issues (for double-walled tank system components) includes: - presence of water (in the interstice); and - failed weekly interstitial monitoring results. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to either repair or replace the compromised piping (with double-walled piping) within 60 days after the date of the NOV.
LIC	» *613-1.12 / 2.1(b)(2)(iii)(c)(1) / 2.1(c)(2)(iii) / 5.1(b)(2)(i):* The (non-UDC) containment sump lacks integrity or is not liquid-tight on its sides, bottom, and/or penetrations. » *Note(s):* Evidence of integrity issues includes: - visible cracking; - degradation; and - failed periodic sump integrity monitoring/testing results (for sumps that are part of a SP2/SP5 UST system and used for piping interstitial monitoring), especially without adequate follow-up repairs. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to either repair or replace (and submit repair/replacement documentation for) the containment sump within 60 days after the date of the NOV.
WDC	» *613-1.12 / 2.1(b)(2)(iii)(c)(1) / 2.1(c)(2)(iii) / 5.1(b)(2)(i):* The (non-UDC) containment sump contains water and/or debris. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must clean the containment sump to be free of all liquids and debris, and submit a photograph showing the cleaned sump. » *Additional Action(s):* The presence of water within the sump is an unusual operating condition (i.e., a suspected spill) which the facility must investigate to determine how water is entering the sump and if it is escaping after being exposed to the potentially contaminated insides of the sump.

LID	» *613-1.12 / 2.1(b)(2)(iii)(c)(1) / 2.1(b)(5)(ii) / 2.1(c)(2)(iii) / 5.1(b)(2)(i) / 5.1(b)(5)(ii):* The under-dispenser containment lacks integrity or is not liquid-tight on its sides, bottom, and/or penetrations. » *Note(s):* Evidence of integrity issues includes: - visible cracking; - degradation; and - failed periodic sump integrity monitoring/testing results (for UDCs that are part of a SP2/SP5 UST system and used for piping interstitial monitoring), especially without adequate follow-up repairs. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to either repair or replace (and submit repair/replacement documentation for) the UDC within 60 days after the date of the NOV.
WDD	» *613-1.12 / 2.1(b)(2)(iii)(c)(1) / 2.1(b)(5)(ii) / 2.1(c)(2)(iii) / 5.1(b)(2)(i) / 5.1(b)(5)(ii):* The under-dispenser containment contains water and/or debris. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must clean the UDC to be free of all liquids and debris, and submit a photograph showing the cleaned UDC. » *Additional Action(s):* The presence of water within the UDC is an unusual operating condition (i.e., a suspected spill) which the facility must investigate to determine how water is entering the UDC and if it is escaping after being exposed to the potentially contaminated insides of the UDC.
SC_itm	***Is the containment sump being tested/monitored periodically?*** ***Note: containment sumps used for piping interstitial monitoring must be tested triennially or monitored annually (for DW sumps), for integrity.***
Y	» No issues were found under this question.
NT [SP2/SP5]	» *613-2.2(f)(1)(ii) / 5.2(f):* Integrity testing is not being performed for the containment sump(s) used for piping interstitial monitoring. » *Note(s):* Testing records are the primary evidence that integrity testing is being performed; if testing is being performed, but either the testing is not being recorded or records are not being retained for at least three years or until the next test (whichever is later), Response **NRT** under Question **SC_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) an integrity test.
PT [SP2/SP5]	» *613-2.2(f)(1)(ii) / 5.2(f):* Integrity testing is not being performed for the containment sump(s) used for piping interstitial monitoring, at least triennially. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) an integrity test.
NM [SP2/SP5]	» *613-2.2(f)(1)(i) / 5.2(f):* Integrity monitoring is not being performed for the double-walled containment sump(s) used for piping interstitial monitoring. » *Note(s):* Monitoring records are the primary evidence that integrity monitoring is being performed; if monitoring is being performed, but either the monitoring is not being recorded or records are not being retained for as long as the double-walled catch basin is monitored (plus three years), Response **NRM** under Question **SC_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an integrity monitoring.
PM [SP2/SP5]	» *613-2.2(f)(1)(i) / 5.2(f):* Integrity monitoring is not being performed for the double-walled containment sump(s) used for piping interstitial monitoring, at least annually. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an integrity monitoring.
XT [SP2/SP5]	» Sump integrity testing/monitoring is not required because the sump is not used for piping interstitial monitoring. » *Note(s):* Sump integrity testing/monitoring also does not apply to exempt suction piping, regardless of whether the sump is used for piping interstitial monitoring.
XP [SP2/SP5]	» Sump integrity testing/monitoring is not required because the double-walled piping is not connected to a sump.

SC_rec	*Are the testing/monitoring records being retained?* ***Note: testing records must be retained for 3 years or until the next test, whichever is later; monitoring records must be retained for as long as the DW sump is monitored, PLUS 3 years.***
Y	» No issues were found under this question.
NRT ***[SP2/SP5]***	» *613-2.2(f)(2) / 5.2(f):* Integrity testing is not being recorded, or records are not being retained for at least three years or until the next test (whichever is later). » *Note(s):* Testing records are the primary evidence that integrity testing is being performed; if the records are missing, testing is likely not being performed (and Response **NT** under Question **SC_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the results of the last integrity test, or perform (and submit the results of) an integrity test.
NRM ***[SP2/SP5]***	» *613-2.2(f)(2) / 5.2(f):* Integrity monitoring is not being recorded, or records are not being retained for as long as the double-walled containment sump is monitored (plus three years). » *Note(s):* Monitoring records are the primary evidence that integrity monitoring is being performed; if the records are missing, monitoring is likely not being performed (and Response **NM** under Question **SC_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records of the last integrity monitoring, or perform (and submit the records of) an integrity monitoring.

Corrosion Protection

Purpose

Metal tank system components undergo corrosion caused by electrochemical oxidation of metals when in contact with certain media/substances – this results in degradation of the component material and compromising its integrity, which in turn, may result in spills and even releases. Corrosion protection equipment helps reduce and/or eliminate this risk of degradation for metal components.

Requirements

The corrosion protection requirements[394] for SP5 tank systems are affected by the modular nature of hydrant systems and the overlapping authorities afforded to DEC regarding their regulation of AST systems and UST systems. In general, aboveground tanks that are part of a SP5 UST system, as well as underground tanks that are part of a SP5 AST system, are subject to a different Subpart/set of secondary containment requirements than those normally applicable to the tank system as a whole:

Corrosion Protection	***SP5 UST Systems***	***SP5 AST Systems***
Requirements Generally Applicable to the Tank System	*Tanks:* 6 NYCRR paragraph 613-**2.1(b)(1)** *Piping:* 6 NYCRR paragraph 613-**2.1(b)(2)** *Cathodic Protection Testing and Impressed Current Inspections:* 6 NYCRR paragraphs 613-**2.2(i)(2), (3)** *Internal Lining Inspections:* 6 NYCRR paragraph 613-2.2(i)(5)	*Tanks:* 6 NYCRR paragraph 613-**4.1(b)(1)** *Piping:* 6 NYCRR paragraph 613-**4.1(b)(2)** *Cathodic Protection Testing and Impressed Current Inspections:* 6 NYCRR paragraphs 613-**4.2(i)(2), (3)**
Exceptions	*Field-constructed tanks with a design capacity greater than 50k gallons and associated piping, that are part of SP5 UST systems:* 6 NYCRR paragraphs 613-**2.1(c)(1), (2)** *Aboveground tanks that are part of SP5 UST systems:* 6 NYCRR paragraph 613-**4.1(b)(1)** *Cathodic Protection Testing and Impressed Current Inspections:* 6 NYCRR paragraphs 613-**4.2(i)(2), (3)**	*Piping associated with field-constructed tanks with a design capacity greater than 50k gallons, that are part of SP5 AST systems:* 6 NYCRR paragraph 613-**4.1(c)(2)** *Underground tanks that are part of SP5 AST systems:* 6 NYCRR paragraph 613-**3.1(b)(1)** *Cathodic Protection Testing and Impressed Current Inspections (for underground tanks that are part of SP5 AST systems):* 6 NYCRR paragraphs 613-**3.2(i)(2), (3)**

The corresponding corrosion protection sections for the other Subparts will have more information regarding specific requirements and common issues:

- SP2: p. 156
- SP3: p. 251
- SP4: p. 335

[394] Corrosion protection requirements for SP5 hydrant systems are (mostly) part of the design/construction requirements found in 6 NYCRR paragraphs 613-5.1(b)(1), (2).

Questions

CP_pre	***Is the required equipment present? Select all corrosion protection equipment that apply to the tank system, including those required, and any supplementary equipment. Record any inaccuracies with tank/piping type/CP or internal lining under INSP_comm (p. 2).***
Y	» No issues were found under this question.
NT	» *613-2.1(b)(1)(i)(b)(2) / 2.1(b)(1)(i)(b)(3) / 2.1(b)(1)(ii)(b) / 2.1(b)(1)(ii)(d) / 2.1(b)(1)(iii)(b) / 2.1(b)(1)(iii)(d) / 2.1(c)(1)(i) / 2.1(c)(1)(ii) / 2.1(c)(1)(iii) / 3.1(b)(1)(ii)(b) / 3.1(b)(1)(ii)(d) / 3.1(b)(1)(iii)(b) / 3.1(b)(1)(iii)(d) / 4.1(b)(1)(ii)(a)(3) / 4.1(b)(1)(iii)(a)(3) / 5.1(b)(1)(i) / 5.1(b)(1)(ii):* The steel tank is not equipped with the required cathodic protection system (and is otherwise not protected from corrosion). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to: permanently close the tank system within 60 days after the date of the NOV; install a CP system for the unprotected tank (bottom) within 90 days after the date of the NOV; or either lift the tank on racks/cradles/stilts or install an impermeable barrier within 180 days after the date of the NOV. » *Additional Action(s):* Lifting the AST and/or installing an impermeable barrier is not feasible when the tank has a double-bottom (with sand in the interstitial space); in such cases, the facility must (submit a plan to) either close the tank or install a CP system.
NSC ***[SP4/SP5]***	» *613-4.1(b)(1)(ii)(a)(2) / 4.1(b)(1)(iii)(a)(2) / 5.1(b)(1)(i)(b) / 5.1(b)(1)(ii):* There is no surface coating on the AST exterior. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must coat the tank exterior and submit a photograph showing the coated exterior.
XPT	» Tank corrosion protection is not required because the tank is either made of a noncorrodible material or electrically isolated from the ground.
XTT ***[SP3/SP4/SP5]***	» Tank corrosion protection is not required because the tank is either an SP3/SP5, Cat. 1 UST, or a SP4/SP5, Cat. 1 AST.
NP	» *613-2.1(b)(2)(i)(a) / 2.1(b)(2)(ii)(b) / 2.1(b)(2)(iii)(b) / 2.1(c)(2)(i) / 2.1(c)(2)(ii) / 2.1(c)(2)(iii) / 3.1(b)(2)(ii)(b) / 3.1(b)(2)(iii)(b) / 4.1(b)(2)(ii)(b) / 4.1(b)(2)(iii)(b) / 4.1(c)(2)(i) / 4.1(c)(2)(ii) / 4.1(c)(2)(iii) / 5.1(b)(2)(i) / 5.1(b)(2)(ii):* The (metal) piping/ancillary equipment is not equipped with the required cathodic protection system (and is otherwise not protected from corrosion). » *Note(s):* This Response does not include any piping/ancillary equipment that are partly not protected from corrosion; such violations should be captured under Response **NA** instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to replace the unprotected piping/ancillary equipment (with a corresponding tank system component that is either made of a noncorrodible material or electrically isolated/cathodically protected) within 60 days after the date of the NOV.
NA	» *613-2.1(b)(2)(i)(a) / 2.1(b)(2)(ii)(b) / 2.1(b)(2)(iii)(b) / 2.1(c)(2)(i) / 2.1(c)(2)(ii) / 2.1(c)(2)(iii) / 3.1(b)(2)(ii)(b) / 3.1(b)(2)(iii)(b) / 4.1(b)(2)(ii)(b) / 4.1(b)(2)(iii)(b) / 4.1(c)(2)(i) / 4.1(c)(2)(ii) / 4.1(c)(2)(iii) / 5.1(b)(2)(i) / 5.1(b)(2)(ii):* A portion of the piping/ancillary equipment is not protected from corrosion. » *Note(s):* This Response does not include any piping/ancillary equipment that are wholly not protected from corrosion; such violations should be captured under Response **NP** instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either: install a cathodic protection system for/electrically isolate the unprotected portion of the piping/ancillary equipment and submit documentation for the cathodically protected/electrically isolated equipment; or replace (and submit replacement documentation for) the piping/ancillary equipment with a corresponding tank system component that is either made of a noncorrodible material or electrically isolated/cathodically protected.
XPP	» Piping/ancillary equipment corrosion protection is not required because the tank system component is either made of a noncorrodible material or electrically isolated from the ground.
XTP ***[SP3/SP4/SP5]***	» Piping/ancillary equipment corrosion protection is not required because the tank system component is a Cat. 1 component that is part of either a SP3 UST system or a SP4/SP5 AST system.

NTL ***[SP2/SP5]***	» *613-2.1(b)(1)(i)(b)(1) / 2.1(b)(1)(i)(b)(3) / 5.1(b)(1)(i):* The steel, Cat. 1 UST is not equipped with either a cathodic protection system or an internal lining (and is otherwise not protected from corrosion). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to permanently close the tank system within 60 days after the date of the NOV.
CP_gwo	***Is the equipment in good working order?***
Y	» No issues were found under this question.
TMP	» *613-1.12 / 2.2(i)(1) / 2.2(i)(2)(ii) / 3.2(i)(1) / 3.2(i)(2)(ii) / 4.2(i)(1) / 4.2(i)(2)(ii) / 5.2(i)(1) / 5.1(i)(2):* The cathodic protection system is not providing adequate protection to the tank. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to either repair or replace the cathodic protection system within 90 days after the date of the NOV.
SCF ***[SP4/SP5]***	» *613-1.12 / 4.1(b)(1)(ii)(a)(2) / 4.1(b)(1)(iii)(a)(2) / 5.1(b)(1)(i)(b) / 5.1(b)(1)(ii):* The surface coating on the AST exterior either is faded or no longer covers the whole exterior. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must re-coat the tank exterior and submit a photograph showing the coated exterior.
PMP	» *613-1.12 / 2.2(i)(1) / 2.2(i)(2)(ii) / 3.2(i)(1) / 3.2(i)(2)(ii) / 4.2(i)(1) / 4.2(i)(2)(ii) / 5.2(i)(1) / 5.1(i)(2):* The cathodic protection system is not providing adequate protection to the piping/ancillary equipment. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to either repair or replace the cathodic protection system within 90 days after the date of the NOV.
RO	» *613-1.12 / 2.2(i)(1) / 3.2(i)(1) / 4.2(i)(1) / 5.2(i)(1) / 5.1(i)(2):* The rectifier is not operational. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either repair or replace (and submit repair/replacement documentation for) the rectifier.
RP	» *613-1.12 / 2.2(i)(1) / 3.2(i)(1) / 4.2(i)(1) / 5.2(i)(1) / 5.1(i)(2):* The rectifier does not have continuous power (but is otherwise operational). » *Note(s):* This Response does not include any rectifier that has had occasional power interruptions (e.g., someone turned off the power); such violations should be captured under Response **RCO** instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either repair or reconfigure (and submit repair/reconfiguration documentation for) the impressed current system such that the rectifier has continuous power.
RCO	» *613-1.12 / 2.2(i)(1) / 3.2(i)(1) / 4.2(i)(1) / 5.2(i)(1) / 5.1(i)(2):* The rectifier clock indicates that the rectifier has not operated continuously (but is otherwise operational). » *Note(s):* This Response does not include any rectifier that has periodic power interruptions (e.g., due to how the CP system was designed); such violations should be captured under Response **RP** instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either repair or reconfigure (and submit repair/reconfiguration documentation for) the impressed current system such that the rectifier has continuous power.
LF	» *613-1.12 / 2.2(i)(5) / 5.2(i)(1):* The lining no longer meets the original design specifications. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to either repair the internal lining or permanently close the tank system, within 60 days after the date of the NOV. » *Additional Action(s):* Lining inspections – particularly those performed in accordance with API RP 1631 (June 2001) – often include an assessment of the tank wall thickness (typically quantitative) to determine if the tank either is still structurally sound or still has sufficient thickness (compared to its original thickness) to continue service. The tank system must be closed if the tank wall either is too thin or already has holes (through corrosion).

CP_itm	Is the equipment being tested/monitored periodically?
Y	» No issues were found under this question.
NTT	» *613-2.2(i)(2) / 3.2(i)(2) / 4.2(i)(2) / 5.2(i)(1) / 5.1(i)(2):* Cathodic protection testing is not being performed for the tank. » *Note(s):* Test results are the primary evidence that cathodic protection testing is being performed; if testing is being performed, but test results are not being retained for at least three years, Response **NRT** under Question **CP_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a cathodic protection test.
PTT	» *613-2.2(i)(2)(i) / 3.2(i)(2)(i) / 4.2(i)(2)(i) / 5.2(i)(1) / 5.1(i)(2):* Cathodic protection testing is not being performed for the tank at least annually. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a cathodic protection test. » *Additional Action(s):* There is no need for the curative measure if the most recent annual cathodic protection test was performed but a previous one was not; this violation, however, should still be cited.
NPT	» *613-2.2(i)(2) / 3.2(i)(2) / 4.2(i)(2) / 5.2(i)(1) / 5.1(i)(2):* Cathodic protection testing is not being performed for the piping/ancillary equipment. » *Note(s):* Test results are the primary evidence that cathodic protection testing is being performed; if testing is being performed, but test results are not being retained for at least three years, Response **NRP** under Question **CP_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a cathodic protection test.
PPT	» *613-2.2(i)(2)(i) / 3.2(i)(2)(i) / 4.2(i)(2)(i) / 5.2(i)(1) / 5.1(i)(2):* Cathodic protection testing is not being performed for the piping/ancillary equipment at least annually. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a cathodic protection test. » *Additional Action(s):* There is no need for the curative measure if the most recent annual cathodic protection test was performed but a previous one was not; this violation, however, should still be cited.
NIC	» *613-2.2(i)(3) / 3.2(i)(3) / 4.2(i)(3) / 5.2(i)(1) / 5.1(i)(2):* Impressed current inspections are not being performed. » *Note(s):* Inspection records are the primary evidence that impressed current inspections are being performed; if inspections are being performed, but either the inspections are not being recorded or records are not being retained for at least three years, Response **NRI** under Question **CP_rec** should be selected instead. » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must perform (and submit the records of) an impressed current inspection.
PIC	» *613-2.2(i)(3) / 3.2(i)(3) / 4.2(i)(3) / 5.2(i)(1) / 5.1(i)(2):* Impressed current inspections are not being performed at least every 60 days. » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must perform (and submit the records of) an impressed current inspection. » *Additional Action(s):* There is no need for the curative measure if the most recent 60-day impressed current inspection was performed but a previous one was not; this violation, however, should still be cited.
NLI [SP2/SP5]	» *613-2.2(i)(5) / 5.2(i)(1):* Lining inspections are not being performed for the Cat. 1 UST. » *Note(s):* Inspection records are the primary evidence that lining inspections are being performed; if inspections are being performed, but either the inspections are not being recorded or records are not being retained for at least five years, Response **NRL** under Question **CP_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) a lining inspection.

PLI ***[SP2/SP5]***	» *613-2.2(i)(5) / 5.2(i)(1):* Lining inspections are not being performed for the Cat. 1 UST at least every five years. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) a lining inspection. » *Additional Action(s):* There is no need for the curative measure if the most recent five-year lining inspection was performed but a previous one was not; this violation, however, should still be cited.
XTL ***[SP2/SP5]***	» Lining inspections are not required because the tank is not a SP2/SP5, Cat. 1 UST.
CP_rec	***Are the inspection records being retained?*** ***Note: CP test and impressed current inspection records must be retained for 3 years. Lining inspection records must be retained for 5 years.***
Y	» No issues were found under this question.
NRT	» *613-2.2(i)(4) / 3.2(i)(4) / 4.2(i)(4) / 5.2(i)(1) / 5.1(i)(2):* Cathodic protection test results are not being retained (for the tank) for at least three years. » *Note(s):* Test results are the primary evidence that cathodic protection testing is being performed; if the test results are missing, cathodic protection testing is likely not being performed (and Response **NTT** under Question **CP_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the results of the last test, or perform (and submit the results of) a cathodic protection test.
NRP	» *613-2.2(i)(4) / 3.2(i)(4) / 4.2(i)(4) / 5.2(i)(1) / 5.1(i)(2):* Cathodic protection test results are not being retained (for the piping) for at least three years. » *Note(s):* Test results are the primary evidence that cathodic protection testing is being performed; if the test results are missing, cathodic protection testing is likely not being performed (and Response **NTP** under Question **CP_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the results of the last test, or perform (and submit the results of) a cathodic protection test.
NRI	» *613-2.2(i)(4) / 3.2(i)(4) / 4.2(i)(4) / 5.2(i)(1) / 5.1(i)(2):* Impressed current inspections are not being recorded, or records are not being retained for at least three years. » *Note(s):* Inspection records are the primary evidence that impressed current inspections are being performed; if the records are missing, impressed current inspections are likely not being performed (and Response **NIC** under Question **CP_itm** should be selected instead). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must either submit the records of the last three impressed current inspections, or perform (and submit the records of) an impressed current inspection.
NRL ***[SP2/SP5]***	» *613-2.2(i)(5) / 5.2(i)(1):* Lining inspections are not being recorded, or records are not being retained for at least five years. » *Note(s):* Inspection records are the primary evidence that lining inspections are being performed; if the records are missing, lining inspections are likely not being performed (and Response **NLI** under Question **CP_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records of the last lining inspection, or perform (and submit the records of) a lining inspection.

CP_com	Was the inspection complete/adequate?
Y	» No issues were found under this question.
TR	» *613-2.2(i)(2) / 3.2(i)(2) / 4.2(i)(2) / 5.2(i)(1) / 5.1(i)(2):* Not enough readings were taken (during the cathodic protection test) to accurately assess whether the cathodic protection system is providing adequate protection to the tank. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a cathodic protection test.
PR	» *613-2.2(i)(2) / 3.2(i)(2) / 4.2(i)(2) / 5.2(i)(1) / 5.1(i)(2):* Not enough readings were taken (during the cathodic protection test) to accurately assess whether the cathodic protection system is providing adequate protection to the piping/ancillary equipment. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a cathodic protection test.
ICI	» *613-2.2(i)(3) / 3.2(i)(3) / 4.2(i)(3) / 5.2(i)(1) / 5.1(i)(2):* The impressed current inspection records do not have all of the required information. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an impressed current inspection and include all required information.
LNA *[SP2/SP5]*	» *613-2.2(i)(5) / 5.2(i)(1):* The lining inspection did not sufficiently determine if the lining still meets the original design specifications. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) a lining inspection.
CP_rat	**If repairs were made, are the repairs appropriate/adequate, and was the equipment tested after the repair?**
Y	» No issues were found under this question.
IN	» *613-2.2(j)(3) / 2.2(j)(4) / 3.2(j)(3) / 3.2(j)(4) / 4.2(j)(3) / 4.2(j)(4) / 5.2(j)(1) / 5.1(j)(2):* Repairs performed to either the cathodic protection system or a cathodically protected tank system component were either inappropriate or inadequate. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either: take the tank system out of service and submit a plan to properly repair the cathodic protection system/cathodically protected tank system component (and perform/submit the results of a cathodic protection test) within 90 calendar days after the date of the NOV; or submit a plan to permanently close the tank system within 60 days after the date of the NOV.
NT	» *613-2.2(i)(2)(i) / 2.2(j)(12) / 3.2(i)(2)(i) / 3.2(j)(10) / 4.2(i)(2)(i) / 4.2(j)(9) / 5.2(i)(1) / 5.1(i)(2) / 5.2(j)(1) / 5.1(j)(2):* A cathodic protection test was not performed, or was not performed within six months, after structural repairs to either the cathodic protection system or a cathodically protected tank system component. » *Note(s):* Cathodic protection systems not providing adequate protection to the repaired tank system component should be captured under Question **CP_gwo**, Response **TMP**/**PMP**; all other issues found with the cathodic protection test should be captured under this Response. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) a cathodic protection test.

Color Code and (Tank) Label

Purpose

Color coding ports allows for quick (visual) identification of either the form of petroleum being stored in a specific tank, or the tank system equipment accessible from the surface. Doing so helps the person responsible for transfer activities avoid delivering a petroleum type to the wrong tank (i.e., cross-drops), which can result in off-spec petroleum, equipment failure/corrosion due to incompatibility between the tank and the petroleum, or even direct releases to the lands and/or waters of the State (if delivered to a monitoring well).

Tank labels provide a means of identifying a tank and its specifications quickly and without the need for other documentation (e.g., installation records, registration certificate); this is particularly useful during a delivery, a change-in-service, an emergency, or if the tank has been abandoned.

Requirements

The fill port color coding and tank label requirements[395] for SP5 tank systems are affected by the modular nature of hydrant systems and the overlapping authorities afforded to DEC regarding their regulation of AST systems and UST systems. In general, aboveground tanks that are part of a SP5 UST system, as well as underground tanks that are part of a SP5 AST system, are subject to a different Subpart/set of port color coding/tank labeling requirements than those normally applicable to the tank system as a whole:

Color Code and Tank Label	***SP5 UST Systems***	***SP5 AST Systems***
Requirements Generally Applicable to the Tank System	6 NYCRR paragraphs 613-**2.2(d)(1 – 3)**	6 NYCRR paragraphs 613-**4.2(d)(1 – 3)**
Exceptions	*Aboveground tanks that are part of SP5 UST systems:* 6 NYCRR paragraphs 613-**4.2(d)(1 – 3)**	*Underground tanks that are part of SP5 AST systems:* 6 NYCRR paragraphs 613-**3.2(d)(1 – 3)**

The corresponding color code and tank label sections for the other Subparts will have more information regarding specific requirements and common issues:

- SP2: p. 170
- SP3: p. 263
- SP4: p. 347

[395] Fill port color coding, tank label, and monitoring well requirements for SP5 tank systems are found in 6 NYCRR subdivision 613-5.2(d).

Questions

CL_pre	***Is the required equipment present?***
Y	» No issues were found under this question.
NFC	» *613-2.2(d)(2) / 3.2(d)(2) / 4.2(d)(2) / 5.2(d)(1) / 5.2(d)(2):* The fill port is not color coded (or otherwise marked). » *Note(s):* Fill ports that are marked instead of being color coded accordingly should be captured under Question **CL_gwo**, Response **CIN**. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must properly color code (or mark) the fill port and submit a photograph showing the color coded/marked fill port.
XPF	» Fill port color coding/marking is not required because the tank does not have a fill port.
NWC	» *613-2.2(d)(3) / 3.2(d)(3) / 4.2(d)(3) / 5.2(d)(1) / 5.2(d)(2):* The monitoring wells are not color coded (or otherwise marked), or do not have (marked) lids. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must clearly identify the monitoring wells and submit a photograph showing the marked/color coded lids. » *Additional Action(s):* The facility as-built plan (if required) must also make note of all monitoring wells (and their locations) on site.
XPW	» Monitoring well color coding/marking is not required because the tank system does not have monitoring wells.
NL	» *613-2.2(d)(1) / 3.2(d)(1) / 4.2(d)(1) / 5.2(d)(1) / 5.2(d)(2):* A tank label is not present at (or near) each fill port associated with the tank. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must install a tank label and submit a photograph showing the fill port(s) with the new tank label.
XTL [SP2/SP3/SP5]	» Tank labels are not required because the tank is a SP2/SP3/SP5, Cat. 1 UST.
CL_gwo	***Is the equipment in good working order?***
Y	» No issues were found under this question.
CIN	» *613-1.12 / 2.2(d)(2) / 3.2(d)(2) / 4.2(d)(2) / 5.2(d)(1) / 5.2(d)(2):* The color coding/marking on the fill port are either unclear or indicative of something else (e.g., a different petroleum type or a monitoring well). » *Note(s):* This Response also includes any such ports with either faded/unidentifiable or inaccurate color coding/markings. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must properly color code (or mark) the fill port and submit a photograph showing the color coded/marked fill port.
WIM	» *613-1.12 / 2.2(d)(3) / 3.2(d)(3) / 4.2(d)(3) / 5.2(d)(1) / 5.2(d)(2):* The color coding/marking on the monitoring wells are either unclear or indicative of something else (e.g., a fill port). » *Note(s):* This Response also includes any such ports with either faded/unidentifiable or inaccurate color coding/markings. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must properly color code (or mark) the monitoring wells and submit a photograph showing the color coded/marked lids.
LIN	» *613-1.12 / 2.2(d)(1) / 3.2(d)(1) / 4.2(d)(1) / 5.2(d)(1) / 5.2(d)(2):* The tank label has either incomplete or inaccurate information. » *Note(s):* This Response also includes any faded/unidentifiable tank labels. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must rewrite or replace the tank label and submit a photograph showing the fill port with the rewritten/replaced tank label.

CL_mis	*Are there any other observed violations?*
MWS	» *613-2.2(d)(3) / 3.2(d)(3) / 4.2(d)(3) / 5.2(d)(1) / 5.2(d)(2):* The monitoring wells are not capped/secured (to prevent liquids from entering from the surface). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must cap/secure the monitoring wells and submit a photograph showing the capped/secured wells.

Fill Port Catch Basin

Purpose

Catch basins are meant to capture spills/overfills at the fill ports – one of the most common sources of spills – and prevent them from reaching the lands and/or waters of the State (i.e., becoming releases).

Requirements

The fill port catch basin requirements[396] for SP5 tank systems apply only to UST systems and are identical to those of SP2 UST systems. As such the catch basin section for Subpart 2 will have more information regarding specific requirements and common issues (p. 173).

Questions

CB_pre	*Is the required equipment present?*
Y	» No issues were found under this question.
N ***[SP2/SP5]***	» *613-2.1(b)(4) / 5.1(b)(4):* The fill port is not equipped with the required catch basin. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to install a catch basin within 60 days after the date of the NOV.
XP ***[SP2/SP5]***	» A catch basin is not required because the UST system receives 25 gallons or less during each delivery.
XT ***[SP3/SP4/SP5]***	» A catch basin is not required because the tank is either an SP3/SP5 UST or a SP4/SP5 AST.
NX	» *613-1.4(b):* The catch basin could not be accessed for inspection (e.g., locked/jammed/blocked fill port cover). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must submit documentation showing that the spill bucket is present and in good working order. » *Additional Action(s):* The inspector should conduct a follow-up inspection (where possible) to observe the catch basin rather than rely on installation documentation or photographs from the facility. Catch basins associated with SP2/SP5 UST systems must allow for visual inspections.

[396] Fill port catch basin requirements for SP5 hydrant systems are found in 6 NYCRR paragraph 613-5.1(b)(4); integrity monitoring/testing requirements for SP5 catch basins (associated with underground tanks that are part of UST systems) are found in 6 NYCRR subdivision 613-5.2(f).

CB_gwo	***Is the equipment in good working order?***
Y	» No issues were found under this question.
LI	» *613-1.12 / 2.1(b)(4) / 5.1(b)(4):* The catch basin lacks integrity or is not liquid-tight on its sides and/or bottom. » *Note(s):* Evidence of integrity issues includes: - visible cracking; - degradation; and - failed periodic catch basin integrity monitoring/testing results (for catch basins that are part of a SP2/SP5 UST system) without adequate follow-up repairs. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must submit a plan to either repair or replace (and submit repair/replacement documentation for) the catch basin within 60 days after the date of the NOV. » *Additional Action(s):* A ball float valve is likely inoperable if the spill bucket either lacks integrity or is not liquid-tight on its sides or bottom (see Question **OP_gwo**, Response **CB**).
WD	» *613-1.12 / 2.1(b)(4) / 5.1(b)(4):* The catch basin contains water and/or debris. » *Note(s):* Liquids and debris limit the catch basin's containment volume, obscure possible leaks, and may also interfere with sensors. The interstice of double-walled spill buckets should also be clear of liquid and debris. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must clean the catch basin to be free of all liquids and debris, and submit a photograph showing the cleaned catch basin. » *Additional Action(s):* The presence of water within the interstice of a double-walled catch basin is an unusual operating condition (i.e., a suspected spill) which the facility must investigate to determine how water is entering the interstice and if it is escaping after being exposed to the potentially contaminated insides of the interstice.

CB_itm	***Is the catch basin being tested/monitored periodically?*** ***Note: catch basins must be tested triennially or monitored every 30 days (for DW catch basins), for integrity.***
Y	» No issues were found under this question.
NT ***[SP2/SP5]***	» *613-2.2(f)(1)(ii) / 5.2(f):* Integrity testing is not being performed for the catch basin. » *Note(s):* Testing records are the primary evidence that integrity testing is being performed; if testing is being performed, but either the testing is not being recorded or records are not being retained for at least three years or until the next test (whichever is later), Response **NRT** under Question **CB_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) an integrity test.
PT ***[SP2/SP5]***	» *613-2.2(f)(1)(ii) / 5.2(f):* Integrity testing is not being performed for the catch basin at least triennially. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the results of) an integrity test.
NM ***[SP2/SP5]***	» *613-2.2(f)(1)(i) / 5.2(f):* Integrity monitoring is not being performed for the double-walled catch basin. » *Note(s):* Monitoring records are the primary evidence that integrity monitoring is being performed; if monitoring is being performed, but either the monitoring is not being recorded or records are not being retained for as long as the double-walled catch basin is monitored (plus three years), Response **NRM** under Question **CB_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an integrity monitoring.
PM ***[SP2/SP5]***	» *613-2.2(f)(1)(i) / 5.2(f):* Integrity monitoring is not being performed for the double-walled catch basin at least every 30 days. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an integrity monitoring.
CB_rec	***Are the testing/monitoring records being retained?*** ***Note: testing records must be retained for 3 years or until the next test, whichever is later; monitoring records must be retained for as long as the DW catch basin is monitored, PLUS 3 years.***
Y	» No issues were found under this question.
NRT ***[SP2/SP5]***	» *613-2.2(f)(2) / 5.2(f):* Integrity testing is not being recorded, or records are not being retained for at least three years or until the next test (whichever is later). » *Note(s):* Testing records are the primary evidence that integrity testing is being performed; if the records are missing, testing is likely not being performed (and Response **NT** under Question **CB_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the results of the last integrity test, or perform (and submit the results of) an integrity test.
NRM ***[SP2/SP5]***	» *613-2.2(f)(2) / 5.2(f):* Integrity monitoring is not being recorded, or records are not being retained for as long as the double-walled catch basin is monitored (plus three years). » *Note(s):* Monitoring records are the primary evidence that integrity monitoring is being performed; if the records are missing, monitoring is likely not being performed (and Response **NM** under Question **CB_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records of the last integrity monitoring, or perform (and submit the records of) an integrity monitoring.

Overfill Prevention

Purpose

Overfill prevention devices are installed on tank systems such that the person responsible for the delivery knows when to stop the transfer; this helps reduce the risk of overfills, which comprise a large fraction of preventable spills.

Requirements

The overfill prevention requirements[397] for SP5 tank systems are affected by the modular nature of hydrant systems and the overlapping authorities afforded to DEC regarding their regulation of AST systems and UST systems. In general, aboveground tanks that are part of a SP5 UST system, as well as underground tanks that are part of a SP5 AST system, are subject to a different Subpart/set of overfill prevention requirements than those normally applicable to the tank system as a whole:

Secondary Containment	***SP5 UST Systems***	***SP5 AST Systems***
Requirements Generally Applicable to the Tank System	6 NYCRR paragraph 613-**2.1(b)(3)** *Inspections for Overfill Prevention Equipment:* 6 NYCRR subdivision 613-2.2(e)	6 NYCRR paragraph 613-**4.1(b)(3)**
Exceptions	*Aboveground tanks that are part of SP5 UST systems:* 6 NYCRR paragraph 613-**4.1(b)(3)**	*Underground tanks that are part of SP5 AST systems:* 6 NYCRR paragraph 613-**3.1(b)(3)**

The corresponding design/construction sections for the other Subparts will have more information regarding specific requirements and common issues:

- SP2: p. 179
- SP3: p. 266
- SP4: p. 350

[397] Overfill prevention requirements for SP5 hydrant systems are found in 6 NYCRR paragraph 613-5.1(b)(3).

Questions

OP_rc	***OP equipment: select all OP equipment that apply to the tank, including those required, and any supplementary equipment installed.***
HLA	» High Level Alarm
ASV	» Automatic Shut-Off Valve
BFV	» Float Vent Valve
VW	» Vent Whistle
LG	» Level Gauge
O	» Other
N	» *613-2.1(b)(3) / 3.1(b)(3) / 4.1(b)(3) / 5.1(b)(3)(i) / 5.1(b)(3)(ii):* The tank is not equipped with the required overfill prevention equipment. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid overfill prevention device. » *Additional Action(s):* New ball float valves may not be installed for a SP2/SP5 UST after October 13, 2015.
XT [SP3/SP5]	» Overfill prevention is not required because the tank is a SP3/SP5, Cat. 1 UST.
XP [SP2/SP3/SP5]	» Overfill prevention is not required because the UST system receives 25 gallons or less during each delivery.
NX	» *613-1.4(b):* The overfill prevention equipment could not be accessed for inspection (e.g., locked/blocked fill port, high-level alarm console in a locked room, vent pipe extractor tee either fused or buried). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must submit documentation that an overfill prevention device is present and in good working order/properly installed. » *Additional Action(s):* The inspector should conduct a follow-up inspection (where possible) to observe the overfill prevention equipment rather than rely on installation documentation or photographs from the facility.
OP_ri	***Is the registered OP equipment accurate?***
Y	» No issues were found under this question.
IN	» *613-1.9(a)(4):* The registered overfill prevention equipment is inaccurate. » *Note(s):* This Response does not include expired facility registrations, inaccurate facility information, unregistered tanks, or unregistered facilities; such violations should be captured under Question **REG_info**. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must correct the site registration online to reflect the overfill prevention equipment. » *Additional Action(s):* The inspector should note the specific inaccuracy with the overfill prevention under Question **OP_nov**, to include it in the list of registration discrepancies (in the NOV) that need to be corrected.
OP_nov	***Which OP equipment should be noted in the NOV?***

OP_val	*Is the equipment valid for the tank system?*
Y	» No issues were found under this question.
BF3 ***[SP2/SP5]***	» *613-2.1(b)(3)(iii) / 5.1(b)(3)(i):* A ball float valve was installed for the UST after October 13, 2015 (and there are no other valid overfill prevention equipment in use). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid overfill prevention device. » *Additional Action(s):* Ball float valves may be rendered inoperable by certain tank system components. The overfill prevention device installed (as part of the curative measure) must be compatible with the ball float valve if the facility elects to keep it; otherwise, the ball float valve may need to be uninstalled.
SLB	» The ball float valve is not required for the tank or supplements a different OP device that is being used to meet overfill prevention requirements. » *Note(s):* Ball float valves may be rendered inoperable by certain tank system components, or the type of deliveries made to the tank; in such cases, the ball float valve may need to be uninstalled.
LGU ***[SP2/SP5]***	» *613-2.1(b)(3)(i) / 5.1(b)(3)(i) / 5.1(b)(3)(ii):* The level gauge is not a valid overfill prevention device for the UST (and there are no other valid overfill prevention equipment in use). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid overfill prevention device.
LGB ***[SP3/SP4/SP5]***	» *613-3.1(b)(3)(i)(a) / 4.1(b)(3)(i)(a) / 5.1(b)(3)(i) / 5.1(b)(3)(ii):* The level gauge either does not cover the entire height of the tank or is equipped on a tank that is too big/tall (and there are no other valid overfill prevention equipment in use). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid overfill prevention device.
SLG	» The level gauge is not required for the tank or supplements a different OP device that is being used to meet overfill prevention requirements.
VW	» *613-2.1(b)(3)(i) / 3.1(b)(3)(i) / 4.1(b)(3)(i) / 5.1(b)(3)(i) / 5.1(b)(3)(ii):* The vent whistle is not a valid overfill prevention device for the tank (and there are no other valid overfill prevention equipment in use). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must install/utilize (and submit documentation of) a valid overfill prevention device.
SVW	» The vent whistle is not required for the tank or supplements a different OP device that is being used to meet overfill prevention requirements.

OP_gwo	Is the equipment in good working order?
Y	» No issues were found under this question.
O	» *613-1.12 / 2.1(b)(3)(i) / 3.1(b)(3)(i) / 4.1(b)(3)(i) / 5.1(b)(3)(i) / 5.1(b)(3)(ii):* The overfill prevention equipment is inoperable. » *Note(s):* The overfill prevention equipment is considered inoperable if any of the following is true: - the automatic shutoff valve has been tampered with/is obstructed; - the automatic shutoff valve is not oriented properly (e.g., the flapper does not open towards the far end of the tank, the valve is upside down); - the high-level alarm test button/function does not work; - the equipment is corroded/degraded; - the equipment is inaccurate/uncalibrated (such that the person responsible for the transfer cannot tell when to stop the flow of petroleum); - the device does not activate when the tank is filled to its working capacity; - the tank has been repeatedly filled beyond its working capacity, per the delivery records; or - the overfill prevention equipment failed its triennial inspection (for SP2/SP5 UST systems) and adequate follow-up repairs were not conducted. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must repair or replace (and submit repair/replacement documentation for) the overfill prevention equipment. » *Additional Action(s):* New ball float valves may not be installed, nor existing ball float valves repaired/replaced, for a SP2/SP5 UST after October 13, 2015.
CB ***[SP2/SP3/SP5]***	» *613-1.12 / 2.1(b)(3)(i)(b) / 2.1(b)(3)(i)(c) / 3.1(b)(3)(i)(c) / 3.1(b)(3)(i)(d) / 5.1(b)(3)(i) / 5.1(b)(3)(ii):* The ball float valve is rendered inoperable by either a broken/obstructed catch basin drain valve or a damaged catch basin. » *Note(s):* This Response does not include ball float valves incompatible with either other tank system components or the type of deliveries made to the tank; such violations should be captured under Response **BFV** instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit a plan to repair/replace (and submit repair/replacement documentation for) the catch basin within 60 days after the date of the NOV, and/or install/utilize (and submit documentation of) a valid overfill prevention device.
BFV	» *613-1.12 / 2.1(b)(3)(i) / 2.1(b)(3)(ii) / 3.1(b)(3)(i) / 3.1(b)(3)(ii) / 4.1(b)(3)(i) / 4.1(b)(3)(ii) / 5.1(b)(3)(i) / 5.1(b)(3)(ii):* The ball float valve is rendered inoperable by either another tank system component or the type of deliveries made to the tank. » *Note(s):* Ball float valves should not be used with: - automatic shutoff valves when the ball float valve activates first; - suction piping (i.e., suction pumps/air eliminators); - coaxial Stage I vapor recovery; - additional tank-top openings (e.g., fill ports, gauging ports, dual-point Stage I vapor recovery ports, etc.) without their own "trap-door" devices (e.g., check valves) or ball float valves; - tank systems that receive pressurized deliveries; or - SP4/SP5 ASTs. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either address the equipment incompatibility, or install/utilize (and submit documentation of) a valid overfill prevention device. » *Additional Action(s):* Addressing the equipment compatibility may not always be feasible/practical, in which case, the facility may have to utilize either an automatic shutoff valve or a high-level alarm.

ASV	» *613-1.12 / 2.1(b)(3)(i) / 2.1(b)(3)(ii) / 3.1(b)(3)(i) / 3.1(b)(3)(ii) / 4.1(b)(3)(i) / 4.1(b)(3)(ii) / 5.1(b)(3)(i) / 5.1(b)(3)(ii):* The automatic shutoff valve is rendered inoperable by either another tank system component or the type of deliveries made to the tank. » *Note(s):* Automatic shutoff valves should not be used with: - ball float valves when the automatic shutoff valve activates second; or - tank systems that receive pressurized/gravity head deliveries (i.e., specific delivery types require certain designs). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either address the equipment incompatibility, or install/utilize (and submit documentation of) a valid overfill prevention device. » *Additional Action(s):* Addressing the equipment compatibility may not always be feasible/practical, in which case, the facility may have to utilize a high-level alarm.
AV	» *613-1.12 / 2.1(b)(3)(i)(b) / 2.1(b)(3)(i)(d) / 3.1(b)(3)(i)(c) / 3.1(b)(3)(i)(e) / 4.1(b)(3)(i)(c) / 4.1(b)(3)(i)(e) / 5.1(b)(3)(i) / 5.1(b)(3)(ii):* The high-level alarm is not audible/visible (during typical weather/working conditions) from every fill port associated with the tank. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must repair or replace (and submit repair/replacement documentation for) the high-level alarm.
LGR	» *613-1.12 / 3.1(b)(3)(i)(a) / 4.1(b)(3)(i)(a) / 5.1(b)(3)(i) / 5.1(b)(3)(ii):* The level gauge cannot be conveniently read from every fill port associated with the tank. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either relocate (and submit installation documentation for) the level gauge or install/utilize (and submit documentation of) a valid overfill prevention device.
ACL	» *613-1.12 / 2.1(b)(3)(i) / 3.1(b)(3)(i) / 4.1(b)(3)(i) / 5.1(b)(3)(i) / 5.1(b)(3)(ii):* The overfill prevention equipment is not set to activate at the appropriate level. » *Note(s):* This Response does not include overfill prevention equipment that do not activate (even when set at the appropriate level); such violations should be captured under Response **O** instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must reset the overfill prevention device to activate at an appropriate level and submit documentation justifying the new actuation height/working capacity.
OP_itm	***Is the equipment being inspected periodically?***
Y	» No issues were found under this question.
NI [SP2/SP5]	» *613-2.2(e)(1) / 5.2(e):* Overfill prevention inspections are not being performed. » *Note(s):* Inspection records are the primary evidence that overfill prevention inspections are being performed; if inspections are being performed, but either the inspections are not being recorded or records are not being retained for at least three years or until the next test (whichever is later), Response **NR** under Question **OP_rec** should be selected instead. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an overfill prevention inspection.
PI [SP2/SP5]	» *613-2.2(e)(1) / 5.2(e):* Overfill prevention inspections are not being performed at least triennially. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an overfill prevention inspection.

OP_rec	***Are the inspection records being retained?*** ***Note: records must be retained for 3 years or until the next inspection, whichever is later.***
Y	» No issues were found under this question.
NR ***[SP2/SP5]***	» *613-2.2(e)(3) / 5.2(e):* Overfill prevention inspections are not being recorded, or records are not being retained for at least three years or until the next test (whichever is later). » *Note(s):* Inspection records are the primary evidence that overfill prevention inspections are being performed; if the records are missing, inspections are likely not being performed (and Response **NI** under Question **OP_itm** should be selected instead). » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must either submit the records of the last overfill prevention inspection, or perform (and submit the records of) an overfill prevention inspection.
OP_com	***Was the inspection complete/adequate?***
Y	» No issues were found under this question.
CL ***[SP2/SP5]***	» *613-2.2(e)(1)(i) / 5.2(e):* The actuation height was not verified (as being appropriate) as part of the overfill prevention inspection. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an overfill prevention inspection and include the actuation height in the inspection.
AL ***[SP2/SP5]***	» *613-2.2(e)(1)(ii) / 5.2(e):* The overfill prevention equipment was not verified to activate at the correct height (per the tank working capacity) as part of the overfill prevention inspection. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must perform (and submit the records of) an overfill prevention inspection and include the equipment's operability in the inspection.

Valves

Purpose

Valves control the flow of petroleum through piping[398]: this flow can be stopped or diverted to avoid spills in case of equipment failure or user error.

Requirements

Tank systems must be equipped with the following valves (as necessary) and meet applicable requirements[399].

SP5 Valves	Cat. 1 Valve	Cat. 2 Valve	Cat. 3 Valve
Shear Valve	• *Required for:* Remote dispensers (i.e., not tank-mounted) for motor fuel, connected to pressurized piping • *Able to:* Automatically prevent flow of petroleum through the pipe, in the event of a fire or impact (to the dispenser) • *Located:* At grade, at the base/inlet of the dispenser *Note:* shear valves with a slip-joint feature cannot be used to meet regulatory requirements.		
	Designed and Installed: In accordance with: • the manufacturer's instructions (and an acceptable code of practice[400]); and • NFPA 30A (1984), section 4-3.6		*Designed and Installed:* In accordance with: • the manufacturer's instructions (and an acceptable code of practice[400]); and • NFPA 30A (2012), section 6.3.9
Solenoid/ Anti-Siphon Valve	• *Required for:* Pressurized piping, suction piping, etc., and dispensers, for motor fuel, at an elevation below the top of the tank • *Able to:* Prevent flow of petroleum by gravity, in the event of pipe or dispenser/hose failure • *Located:* Adjacent to and downstream of the operating valve		
	Designed and Installed: In accordance with: • the manufacturer's instructions (and an acceptable code of practice[400]); and • NFPA 30A (1984), section 2-1.7		*Designed and Installed:* In accordance with: • the manufacturer's instructions (and an acceptable code of practice[400]); and • NFPA 30A (2012), section 4.2.4

Check Valve	• *Required for:* Remote fill/delivery piping used for pressurized deliveries and associated with tanks:
	  ○ that have both a remote fill and a tank-top fill; or
	  ○ where petroleum levels in the tank are at a higher elevation than the remote fill port
	• *Able to:* Prevent backflow – spills/overfills – through the fill pipe during delivery/transfer (when possible)
	• *Installed:* In accordance with the manufacturer's instructions (and an acceptable code of practice[400])		

Operating Valve	• *Required for:* Tank-piping connections (i.e., not vent piping: delivery piping, pressurized piping, suction piping, etc.):
	  ○ through which petroleum can normally flow; and
	  ○ that have the potential to drain the tank by gravity
	• *Able to:* Prevent flow of petroleum by gravity, in the event of:
	  ○ pipe or dispenser/hose failure; or
	  ○ repairs to/replacement of any solenoid/anti-siphon valves immediately downstream of the operating valve
	• *Located:* As close to the tank connection as practicable, and immediately upstream of any solenoid/anti-siphon valves
	• *Installed:* In accordance with the manufacturer's instructions (and an acceptable code of practice[400])		

[398] This section does not cover valves used for overfill prevention. See **Overfill Prevention** on p. 449.
[399] Valve requirements for SP5 tank systems are found in 6 NYCRR paragraph 613-5.1(b)(6).
[400] See **Tank System: Design/Construction & Compatibility, Installation, Repair** on p. 369.

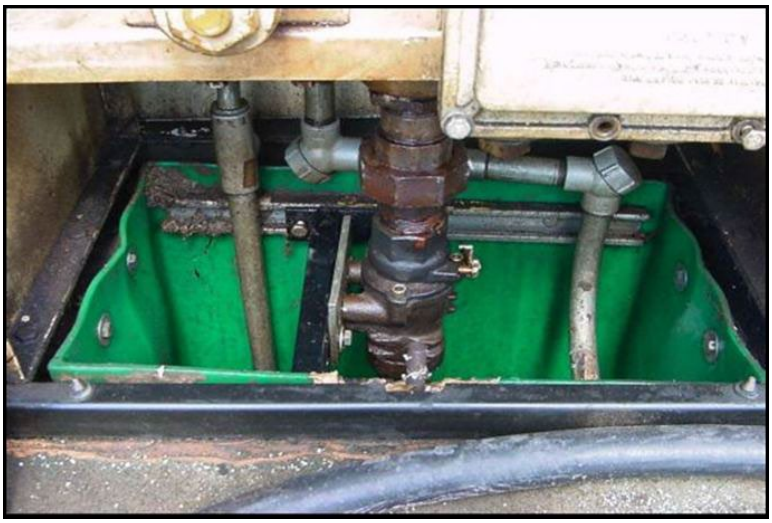
Questions

VL_pre	*Is the required equipment present?*
Y	» No issues were found under this question.
NS	» *613-2.1(b)(6)(i) / 3.1(b)(6)(i) / 4.1(b)(6)(i) / 5.1(b)(6)(i):* There is no shear valve installed beneath the dispenser. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must install (and submit documentation of) a shear valve.
XPS	» A shear valve is not required because the dispenser is not tied to either pressurized piping or a tank storing motor fuel.
NA	» *613-2.1(b)(6)(ii) / 3.1(b)(6)(ii) / 4.1(b)(6)(ii) / 5.1(b)(6)(ii):* The piping/dispenser is not equipped with the required solenoid valve/anti-siphon valve. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must install (and submit documentation of) a solenoid valve/anti-siphon valve.
XPA	» A solenoid valve/anti-siphon valve is not required because the tank either is not storing motor fuel or does not cause a gravity head on the dispenser.
NC	» *613-2.1(b)(6)(iii) / 3.1(b)(6)(iii) / 4.1(b)(6)(iii) / 5.1(b)(6)(iii):* The (remote) fill pipe is not equipped with the required check valve. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must install (and submit documentation of) a check valve.
XPC	» A check valve is not required because the tank does not have any remote fill ports, the tank does not receive pressurized deliveries, or the fill port is at a higher elevation than petroleum levels in the tank.
NO	» *613-2.1(b)(6)(iv) / 3.1(b)(6)(iv) / 4.1(b)(6)(iv) / 5.1(b)(6)(iv):* The piping is not equipped with the required operating valve. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must install (and submit documentation of) an operating valve.
XPO	» An operating valve is not required because there is no piping through which the tank can be siphoned/drained by gravity.

VL_gwo	*Is the equipment in good working order?*
Y	» No issues were found under this question.
SIN	» *613-2.1(b)(6)(i) / 3.1(b)(6)(i) / 4.1(b)(6)(i) / 5.1(b)(6)(i):* The shear valve was not properly installed. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must correct (and submit documentation for) the shear valve installation.
SO	» *613-1.12 / 2.1(b)(6)(i) / 3.1(b)(6)(i) / 4.1(b)(6)(i) / 5.1(b)(6)(i):* The shear valve is inoperable or would not activate if the dispenser were dislodged from the base. » *Note(s):* Note that improper installation may also render the valve inoperable, but should instead be captured in Response **SIN**. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must repair or replace (and submit repair/replacement documentation for) the shear valve.
NXS	» *613-1.4(b):* The shear valve could not be accessed for inspection (e.g., locked/jammed dispenser, dispenser not designed to be accessed). » *Curative Measure(s):* Within 7 calendar days after the date of the NOV, the facility must submit documentation that the shear valve is present and in good working order/properly installed. » *Additional Action(s):* The inspector should conduct a follow-up inspection (where possible) to observe the shear valve rather than rely on installation documentation or photographs from the facility.
ADO	» *613-2.1(b)(6)(ii) / 3.1(b)(6)(ii) / 4.1(b)(6)(ii) / 5.1(b)(6)(ii):* The solenoid valve/anti-siphon valve was not installed adjacent to and downstream of the operating valve. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must install the solenoid valve/anti-siphon valve in the correct location and submit a photograph showing the relocated valve.
AO	» *613-1.12 / 2.1(b)(6)(ii) / 3.1(b)(6)(ii) / 4.1(b)(6)(ii) / 5.1(b)(6)(ii):* The solenoid valve/anti-siphon valve is inoperable. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must repair or replace (and submit repair/replacement documentation for) the solenoid valve/anti-siphon valve.
CO	» *613-1.12 / 2.1(b)(6)(iii) / 3.1(b)(6)(iii) / 4.1(b)(6)(iii) / 5.1(b)(6)(iii):* The backflow check valve is inoperable. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must repair or replace (and submit repair/replacement documentation for) the check valve.
OO	» *613-1.12 / 2.1(b)(6)(iv) / 3.1(b)(6)(iv) / 4.1(b)(6)(iv) / 5.1(b)(6)(iv):* The operating valve is inoperable. » *Curative Measure(s):* Within 30 calendar days after the date of the NOV, the facility must repair or replace (and submit repair/replacement documentation for) the operating valve.

Valve Types

Shear Valve



Shear valves are (typically) mechanical valves attached to pressurized piping beneath a dispenser and anchored to a metal armature within the under-dispenser containment. These valves are designed to automatically stop the flow of motor fuel should the dispenser become dislodged from its base (commonly due to vehicular collisions with the dispenser).

The valve has a shear point/plane – the weakest point in the valve, which must be set at the right height (i.e., at grade) – and at least one internal, spring-loaded poppet held open by a fusible link (i.e., a metal or plastic truss designed to fail under specific conditions). Shear valves break at the shear point when dispensers become dislodged, and the fusible link either breaks or melts (if a fire occurs), allowing the poppet to close and stopping the petroleum from flowing out of the now-exposed piping.

Issues

- **Proper Shear Valve Installation**

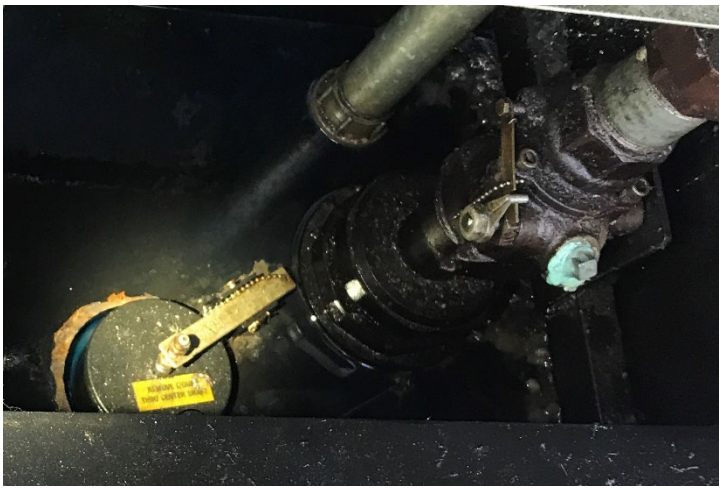
  A common issue with shear valves is incorrect installation. Bolts must anchor the shear valve at the shear point itself such that the shear point is at-grade; this allows the shear valve to activate properly when the dispenser is dislodged. Inspectors should look for any signs of improper installation, such as missing or loose bolts, corroded/damaged supports, and shear valves set higher or lower than grade level.

- **Tampered-With/Disabled Shear Valves**

  Shear valves may at times be tampered with or disabled (due to the cost of replacing it) such that the valve is permanently open, thereby defeating the purpose of the shear valve. Inspectors should look for tools (e.g., socket wrenches, screwdrivers, etc.), wire, or other miscellaneous items attached to the shear valve (where the fusible link would be) and holding the valve open. Shear valves that are missing the fusible link, have been tampered with, or are otherwise disabled must be either repaired or replaced.

- **Shear Valves Associated with Mechanical Float Devices**

  The fusible link holding open the shear valve poppet may sometimes be linked to a mechanical float device located within the under-dispenser containment. The float device will trip the shear valve when liquids are present in the dispenser sump. (Image to the right depicts a shear valve that was tripped by the mechanical float device.)



Solenoid/Anti-Siphon Valve

Solenoid and anti-siphon valves are two types of valves that automatically block the flow of motor fuel when the dispenser is not in use. Such valves are required on dispensing piping (often suction piping) where the petroleum level (in the tank) is normally higher than the dispenser: should either the piping or the dispenser fail, the tank will empty its contents by gravity without these valves.

These valves accomplish the same result but work and are constructed differently.

- Solenoid valves are electrically actuated valves, requiring both power and an electrical signal from the dispenser (i.e., the hook signal) to activate – solenoid valves are normally closed, but open when receiving current/electrical power.
- Anti-siphon valves are hydraulically activated devices that require enough of a vacuum downstream of the valve (e.g., vacuum from a suction pump) to overcome the spring holding the valve closed.

Solenoid and anti-siphon valves are often used in conjunction with operating valves (as required for all piping connected to tanks that could potentially be drained by gravity); these valves must always be installed immediately upstream of any solenoid/anti-siphon valves to provide a manual way of shutting off flow when the solenoid/anti-siphon valve needs to be repaired/replaced. Conversely, any ALLD fitted to the same pressurized piping must be downstream of the solenoid/anti-siphon valve, so the ALLD is not obstructed in detecting leaks.

Issues

- **Solenoid/Anti-Siphon Valve Placement Relative to the Operating Valve**

  Certain solenoid/anti-siphon valves are designed for placement at the highest point of the piping, often supplanting the operating valve. Such valves can only be used if the operating valve is still placed upstream of the solenoid/anti-siphon valve: the flow of petroleum through the solenoid/anti-siphon valve must be stopped before performing repairs/maintenance to avoid spills.

Check Valve

Check valves are designed to ensure that petroleum flows only in one direction and automatically prevent backflow (i.e., spills/overfills) without direct human intervention. These are required for all remote fill pipes where backflow is expected, especially those for tanks that receive pressurized deliveries and either:

- feature both a remote fill and a tank-top fill; or
- have petroleum levels at a higher elevation than the remote fill port (e.g., marina facilities).

Issues

- **Equivalent Devices for Check Valves**

  There are limited situations where the (remote) fill pipe is also used to draw petroleum from the tank, for which a check valve may not be appropriate; for such setups, a readily accessible (or remotely operable) operating valve may be used in lieu of the check valve.

Operating Valve

Operating valves – also known as block valves – allow for manual flow control. These are typically hand-operated mechanical valves (e.g., ball valves), though electronic variants do exist.

These are required on all piping from which the tank may be drained by gravity should a leak occur; as such, they are often used in conjunction with solenoid/anti-siphon valves on dispensing piping. Operating valves must always be installed as close as practicable to the tank connection AND immediately upstream of any solenoid/anti-siphon valves on such lines – this provides a manual way of shutting off flow when the solenoid/anti-siphon valve needs to be repaired/replaced.

Spills

Purpose

Spills – suspected or otherwise – must be addressed[401] as soon as they are discovered to minimize the risk of spills becoming releases and contaminating the lands and/or waters of the State.

Requirements

Spills and Releases

A *spill*[402] (also known as a *leak*) refers to the escape of petroleum from its primary containment in the normal course of storage, transfer, processing, or consumption of petroleum. Common examples of a spill include (but are not limited to):

- free petroleum (in either secondary containment or the ground)
- petroleum vapors in soil
- petroleum in tank-top sumps or catch basins
- overfills

Spill is not synonymous with *release*[403], which (in relation to tank systems) is a spill that reaches the lands and/or waters of the State. Releases are therefore considered spills, but not all spills are releases.

All spills must be reported to the **DEC Spill Hotline (518-457-7362 or 1-800-457-7362) within two hours after discovery**, except for those that meet the following conditions:

- the spill is known to be less than five gallons in total volume;
- the spill is contained and under the control of the spiller;
- the spill has not reached and will not reach the lands or waters of the State of New York (i.e., the spill is not a release);
- the spill is cleaned up within two hours after discovery; and
- the tank system component that leaked is promptly repaired[404].

Releases, as well as spills that do not meet the criteria above, are considered reportable spills which must be reported to the DEC Spill Hotline (518-457-7362 or 1-800-457-7362) within two hours after discovery.

A leak investigation[405] must commence immediately after reporting the spill. In the meantime, the leaking tank system must be immediately emptied[406] and be:

- taken out of service[407] and repaired[404]:
- replaced; or
- permanently closed[407].

[401] Leak reporting, investigation, and confirmation requirements are found in 6 NYCRR sections 613-2.4, 3.4, 4.4, and 5.4, as applicable.
[402] Defined in 6 NYCRR subdivision 613-1.3(an).
[403] Defined in 6 NYCRR subdivision 613-1.3(be).
[404] Repairs must be performed in accordance with 6 NYCRR subdivision 613-2.2(j), 3.2(j), 4.2(j), or 5.2(j), as applicable.
[405] Leak investigations must be performed in accordance with the procedures in 6 NYCRR subdivisions 613-2.4(d), 3.4(d), or 4.4(d), or section 5.4, as applicable, unless corrective action is initiated in accordance with 6 NYCRR Subpart 613-7.
[406] DEC may waive this requirement in certain, limited situations.
[407] Tank systems must be either taken out of service in accordance with 6 NYCRR subdivision 613-2.6(a), 3.5(a), 4.5(a), or section 5.6, or permanently closed in accordance with 6 NYCRR subdivision 613-2.6(b), 3.5(b), 4.5(b), or section 5.6.

Suspected Spills

There are, however, situations or conditions that may or may not point to actual spills, which may or may not need to be reported and investigated. The following[408] are considered suspected spills that must be reported to the Spill Hotline within a specific timeframe after discovery.

Suspected Spills	***Petroleum Discovered Outside a Tank System***	***Unusual Operating Conditions***	***Leak Monitoring Results***	***Containment Equipment Monitoring/ Testing Results***	***Inventory Monitoring and Statistical Inventory Reconciliation Results***

Examples	Free product or vapors in soils, basements, sewer/utility lines, and nearby bodies of water, and whose presence cannot be readily attributed to a specific tank system	• Erratic behavior of dispensing equipment
		• Sudden loss of petroleum
		• Unexplained presence of water in the:
		  ○ tank; or
		  ○ the interstice of a double-walled tank system component
			Positive leak detection results or alarms indicating that a leak may have occurred (i.e., primary containment does not have integrity), <u>from any LD method that is not</u>:
			• inventory monitoring; or
			• statistical inventory reconciliation [SIR]
				• Failed catch basin or containment sump integrity monitoring/testing results (or obvious integrity issues, even before monitoring or testing)
				• Failed secondary containment tightness testing results (post-repair to secondarily contained tanks or piping)
					Positive leak detection results or alarms indicating that a leak may have occurred (i.e., primary containment does not have integrity), <u>from either</u>:
					• inventory monitoring or inventory control; or
					• statistical inventory reconciliation [SIR]

Reporting Timeframe	2 hours after discovery				48 hours after discovery
Caveats		These are not considered reportable if the tank system component is found to be defective but not leaking and is immediately repaired or replaced (after discovery).	These are not considered reportable if either: • the monitoring device is found to be defective and is immediately repaired, replaced, or recalibrated following discovery, AND additional monitoring does not confirm the initial (positive) leak results; or • the alarm was investigated and determined to be a non-spill event (e.g., from a power surge or caused by filling the tank during leak detection testing).		These are not considered reportable if the results are explained by inaccurate recordkeeping, temperature variations, or other factors not related to leaks. • Such cases require that the facility retain for at least three years any records that explain why the results were a false-positive.

A leak investigation[405] must commence immediately after reporting the suspected spill. **Situations that can be described as more than one type of suspected spill must be reported to the DEC Spill Hotline (518-457-7362 or 1-800-457-7362) and investigated <u>unless all individual, applicable caveats are met</u>.**

[408] This is not an exhaustive list of suspected spills. Other situations not specified in this table should be reported to the Spill Hotline as soon as possible – facilities should not wait for affirmative signs (e.g., alarms) that point to a leak before reporting.

If the tank system is found to be leaking, it must be immediately emptied[406] and be:

- taken out of service[407] and repaired[404]:
- replaced; or
- permanently closed[407].

Parties Required to Report Spills, Releases, and Suspected Spills

The following parties must report any spills, releases, or suspected spills:

- *Facility owner*
- *Tank system owner*
- *Operator*
- *Carrier*
- Any contractor in a contractual relationship with the facility owner, tank system owner, or operator
- Any other party and its contractors who have been retained as part of a business transaction relating to the facility
- Any person who causes a spill (at the facility)

Issues

- **Suspected or Otherwise Reportable Spills Observed During the Inspection**

  Inspectors should direct the facility representative to report to the Spill Hotline any suspected/reportable spills observed during the inspection (if they have not done so already), either before leaving the site or shortly after the inspection. Obvious environmental impacts such as gross staining, dead vegetation, etc. are likely to be evidence of a release and is considered reportable.

Questions

SP_type	Was this a suspected spill, an actual spill, or a release?
SS	» A suspected spill: conditions (e.g., leak detection alarm, leak monitoring results, etc.) that point to a possible spill, or a spill that is not readily attributable to any one tank system.
AS	» An actual spill: petroleum that is outside of its ordinary containment.
R	» A release: petroleum that has reached the environment.
SP_ss	**Was the suspected spill addressed in a timely manner?**
Y	» No issues were found under this question.
NRP	» *613-2.4(b)(1) / 2.4(b)(2) / 3.4(b)(1) / 4.4(b)(1) / 5.4(a) / 5.4(b):* A reportable suspected spill was not reported to the DEC Spill Hotline (518-457-7362) within the allowable reporting timeframe. » *Curative Measure(s):* If the suspected spill has not already been reported, the facility must call the DEC Spill Hotline immediately.
NI	» *613-2.4(d) / 3.4(d) / 4.4(d) / 5.4(a) / 5.4(b):* A leak investigation either did not commence immediately or was not completed within seven days after the suspected spill was reported. » *Curative Measure(s):* Within 10 calendar days after the date of the NOV, the facility must complete the leak investigation and submit the results (referencing the assigned spill number). » *Additional Action(s):* A leaking tank system must also be immediately emptied to prevent further leaks and be: taken out of service and repaired; replaced; or permanently closed.
XT	» Reporting the suspected spill is not required because the spill was: - an unusual operating condition but the corresponding tank system component was found to be defective but not leaking (and was immediately repaired or replaced); - a leak detection result that indicated that a leak may have occurred, but the LD equipment was found to be defective, was immediately repaired/recalibrated/replaced, and additional monitoring confirmed that the initial result was inaccurate; - a leak detection result that indicated that a leak may have occurred, but the alarm was investigated and determined to be a non-spill event; or - an inventory monitoring result that indicated that a leak may have occurred, but was explained by factors not related to leaks. Investigating a (suspected) spill is not required because: - the spill did not require reporting (see above); or - corrective action was initiated in accordance with 613-7.

SP_as	Was the (actual) spill addressed in a timely manner?
Y	» No issues were found under this question.
NRP	» *613-2.4(e)(2) / 3.4(e)(2) / 4.4(e)(2) / 5.4(a) / 5.4(b):* A reportable spill was not reported to the DEC Spill Hotline (518-457-7362) within two hours after discovery. » *Curative Measure(s):* If the spill has not already been reported, the facility must call the DEC Spill Hotline immediately. » *Additional Action(s):* A leaking tank system must also be immediately emptied to prevent further leaks and be: taken out of service and repaired; replaced; or permanently closed.
NI	» *613-2.4(d) / 3.4(d) / 4.4(d) / 5.4(a) / 5.4(b):* A leak investigation either did not commence immediately or was not completed within seven days after the spill was reported. » *Curative Measure(s):* Within 10 calendar days after the date of the NOV, the facility must complete the leak investigation and submit the results (referencing the assigned spill number). » *Additional Action(s):* A leaking tank system must also be immediately emptied to prevent further leaks and be: taken out of service and repaired; replaced; or permanently closed.
XT	» Reporting the spill is not required because all of the following are true: - the spill was known to be less than five gallons in total volume; - the spill was contained and under the control of the spiller; - the spill did not reach (and will not reach) the lands or waters of the State; - the spill was cleaned up within two hours after discovery; and - the compromised tank system component (i.e., the equipment that leaked) was promptly repaired (in accordance with applicable repair requirements) or replaced. Investigating a spill is not required because: - the spill did not require reporting (see above); or - corrective action was initiated in accordance with 613-7.
SP_r	**Was the release addressed in a timely manner?**
Y	» No issues were found under this question.
NRP	» *613-2.4(e)(1) / 3.4(e)(1) / 4.4(e)(1) / 5.4(a) / 5.4(b):* A release was not reported to the DEC Spill Hotline (518-457-7362) within two hours after discovery. » *Curative Measure(s):* If the release has not already been reported, the facility must call the DEC Spill Hotline immediately. » *Additional Action(s):* A leaking tank system must also be immediately emptied to prevent further leaks and be: taken out of service and repaired; replaced; or permanently closed.

Acknowledgments

Our deepest gratitude to the numerous people who contributed to this guidance document in one way or another, whose insight, feedback, and patience were crucial in centralizing and collating our collective knowledge in this new DER-25.

						GL	**EX**	PF	CM	GU							
				BC	TM	JS	**OGC**	DG	KP	BS							
BS	MR	AE	JQ	BO	AC	KH	**DER**	AG	DH	GM	JD						
				JA	CF	LZ	**RPS**	AD	JM								
				RB	JV	PB	**FCS**	KK	**AL**	FB							
						KG	**R1**	HC	BD	BK	MH	JB					
							R2	LZ	KL	SA	MA	ML	RA	HR			
						EM	**R3**	JC	MS	SS	CO						
						LW	**R4**	JH	MR	AO	AS	DP	KS	KO	DW	JG	KD
						RM	**R5**	KD	HB	AF	BH	GS	NH	BH	SP	JP	SR
						RN	**R6**	DS	SK	RF	MB	CH	CM	SR	SW		
						KK	**R7**	JK	TB	KS	JB	DM	AR				
					TG	SW	**R8**	MZ	MG	HP	PL	CC	CK	MB	RP	GY	AZ
					AC	PR	**R9**	RP	PD	IK	BB	TW					
						RP	**NAS**	MM									
						WP	**SFK**	XC									
						CT	**WES**	NC									
			MB	EK	DM	AS	**EPA**	TR	TS	RB	RH	LM	SB	TS	EK	GL	HT
		RL	PN	BE	JS	JM	**STN**										
					JB	KW	**CDM**	DD	CD	NP	AP	AR	ER	JW			
				MK	MR	SM		HC	JD	IH	MH	PM	YMA	SN	JO	ER	
							PC	SM	NYACS								