

Meeting UST Compliance Performance Measures Guide For Inspectors April 2018

This document provides underground storage tank (UST) inspectors with information to use in determining whether facilities meet the UST compliance performance measures. This document will also help inspectors calculate EPA’s technical compliance rate. Individual implementing agencies may choose to modify this document to ensure it meets your state’s requirements and inspection procedures. The federal UST regulation requires UST owners and operators to comply with several periodic requirements. Examples include spill prevention equipment and containment sumps used for interstitial monitoring of piping are required to be tested at least once every three years. Owners and operators must perform periodic requirements on or before the same day of the period after the previous requirement was performed.

These resources can help inspectors prepare for and conduct inspections.

- Federal UST regulation <https://www.epa.gov/ust/revising-underground-storage-tank-regulations-revisions-existing-requirements-and-new>
- States with updated regulations that incorporate 2015 federal UST regulation <https://www.epa.gov/ust/state-underground-storage-tank-ust-programs#2015update>
- EPA’s UST publications <https://www.epa.gov/ust/publications-related-underground-storage-tanks>
- National Work Group On Leak Detection Evaluations’ (NWGLDE) *List Of Leak Detection Evaluations For Storage Tank Systems* <http://www.nwglde.org/>
- Underground Storage Tank Technical Compendium about the 2015 UST Regulation – <https://www.epa.gov/ust/underground-storage-tank-ust-technical-compendium-about-2015-ust-regulations>

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UST Compliance Performance Measures Included In The Technical Compliance Rate

UST-9a. Spill Prevention

Spill prevention is not required for USTs in proper temporary closure or for USTs that never receive deliveries >25 gallons.

Element a: Spill prevention device is present and functional. [280.20(c)(1)(i), 280.21(d)]

Verify that:

- Spill bucket is present.
- Spill bucket does not have any holes or cracks.
- In your judgment, the spill bucket will catch or contain drips or spills when the delivery hose is disconnected from the fill pipe.

Element b: Spill prevention device is tested every 3 years or periodically monitored.

[280.35(a)(1)]

Verify that:

- Spill prevention equipment was tested in last 3 years and passed.
- If spill prevention failed test, it was repaired, retested and passed or replaced, according to a code of practice.
- Records for the last 3 years exist.
- Documentation of double-wall and periodic monitoring, if monitoring integrity of both walls every 30 days instead of testing every 3 years. Records must be maintained for as long as the spill bucket or containment sump is using periodic monitoring of the interstitial space.

UST-9b. Overfill Prevention

Overfill prevention is not required for USTs in proper temporary closure or for USTs that never receive deliveries >25 gallons.

Element a: Overfill prevention device is present and operational. [280.20(c)(1)(ii), 280.21(d)]

- Flapper valve is operational, that is, device is not tampered with or inoperable. [280.20(c)(1)(ii)(A), 280.21(d)]
- High level alarm is operational and audible or visible to delivery driver. [280.20(c)(1)(ii)(B), 280.21(d), 280.20(c)(1)(ii)(B), 280.21(d)]
- Ball float is operational. [280.20(c)(1)(ii)(B), 280.21(d)]

Identify the overfill prevention method used:

- *Flapper valve* automatically shuts off delivery when the tank is 95% full or before fittings on top of the tank are exposed to fuel.
 - Verify presence by installation records, contractor verification, or field observation.
 - Verify the flapper valve has not been tampered with, for example using a stick in the drop tube, to inhibit or modify the shut-off point.
 - Perform a visual observation of flapper valve housing in the fill pipe to look for damage.

- *High level alarm*, either audible or visible, sounds when tank is 90% full or 1 minute before being overfilled.
 - Test or observe the owner or operator test the alarm to verify it is functional.
 - Driver can see or hear alarm, as applicable, at point of transfer.

- *Ball float valve* restricts product flow when tank is 90% full or 30 minutes before being overfilled.
 - If possible, verify presence by records or field observations. If not possible, require owner or operator obtain certification, for example from the contractor, that the ball float valve is present.
 - Accessible fittings, for example the spill bucket drain mechanisms, are sealed and intact so that the top of the tank is tight.
 - Verify that appropriate device is being used; for example, ball float valves are inappropriate with some Stage I vapor recovery systems and suction piping systems.
 - If the ball float valve is not operating properly and cannot be repaired, the overfill device must be replaced with either an automatic shutoff device or overfill alarm.

Element b: Overfill prevention device is inspected every 3 years. [280.35(a)(2)]

Compare delivery record's quantities to ullage at time of product delivery. If there is evidence of a problem, check if the UST was ever filled beyond its capacity; this may indicate the overfill device is not working. Verify that:

- The overfill was inspected within the last 3 years.
- If overfill failed, it was repaired, retested and passed, or replaced according to code of practice. A ball float cannot be replaced with another ball float.
- Records for last 3 years exist.

UST-9c. Corrosion Protection

Element a: Metal tank and piping, which includes fittings, connections, etc., are protected from corrosion. [280.20(a), 280.20(b), 280.21(b), 280.21(c)] Metal piping components, such as swing joints, flex-connectors, etc., are isolated from the ground or cathodically protected. Fiberglass reinforced plastic (FRP) tanks and piping satisfy the corrosion protection (CP) requirements. Regardless, verify that metal components are isolated or booted, cathodically protected, or not in contact with the ground.

Verify records are available to document either:

- Tank, piping, and all fittings or connections are protected against corrosion; or
- CP is not necessary.

Element b: CP systems were tested or inspected, as applicable, within 6 months of repair of any cathodically protected UST system. [280.33(e)]

Element c: Corrosion protection system is properly operated and maintained to provide continuous protection. [280.31(a)(b), 280.70(a)]

- CP system is properly operated and maintained; this includes USTs in temporary closure.
 - CP system is performing adequately based on results of testing. [280.31(b)]; or

- CP system tested within required period and operator is conducting or has completed appropriate repair in response to test results reflecting CP system not providing adequate protection.

Element d: UST systems with impressed current cathodic protection are inspected every 60 days to ensure equipment is running properly. [280.31(c)]

Operation And Maintenance of Corrosion Protection

Corrosion protection must be maintained on USTs in temporary closure. This includes recording rectifier readings and performing the periodic CP test and internal lining inspections, as applicable.

For each UST system, identify:

- Installation date of UST system;
- Corrosion protection method used;
- Type of material used to construct tank, line, and other components in contact with the ground; and
- Date of repairs to tanks, lines, and other components in contact with the ground.
- *Cathodic protection – impressed current*, verify that:
 - The rectifier is operational.
 - Rectifier’s electrical source provides power 24 hours a day, every day. Check for dedicated power source.
 - Records are available for two of the last three 60-day inspections; ensure there is a rectifier reading and it was performed within the last 60 days. The most recent inspection must show that the rectifier is operating within normal limits and all indications are that the CP system has not been turned off.
 - The rectifier has been operating continuously. Use the meter, if present and operational, to determine if rectifier has been turned off or without power. You can use the previous reading to calculate a reasonable estimate of what the meter hours should be.
 - CP system was tested within the last 3 years.
 - The most recent CP system test showed corrosion protection was adequate, for example, it meets -850 mV instant off or 100 mV polarization criterion, and that any non-passing results were promptly investigated and corrected to achieve a passing result.
 - When looking at tightness test records, tanks and piping were tightness tested within 30 days of repair completion; this is not required for tank and piping using monthly monitoring.
 - CP system was tested within 6 months of repair to the CP system.
 - Metal components at tank and dispenser are isolated, or booted, cathodically protected, or not in contact with the ground.
- *Cathodic protection – galvanic with sacrificial anodes*, verify that:
 - The most recent CP system test showed corrosion protection was adequate, or -850 mV, and that non-passing results were promptly investigated and corrected to achieve a passing result.

- When looking at tightness test records, tanks and piping were tightness tested within 30 days of repair completion; this is not required for tanks using monthly monitoring.
- CP systems were tested within 6 months of repair to the CP system.

Element e: Lined tanks are inspected periodically and lining is in compliance.

[280.21(b)(1)(ii)] According to date established by the implementing agency, owners and operators must permanently close, per subpart G, an UST system that does not meet the new UST system performance standards in 280.20 or has not been upgraded or lined as required.

- *Internal lining, applies to tanks only, verify that:*
 - Internal lining was inspected in a timely manner, meaning within 10 years after installation and every 5 years thereafter.
 - Internal lining was inspected by a procedure acceptable to implementing agencies, some of whom do not accept inspection by video camera.
 - Tank passed the internal lining inspection or one of the following was done, per API 1631:
 - Lining repaired;
 - Cathodic protection system installed, if tank's metal thickness is $\geq 75\%$ original thickness; or
 - Tank permanently closed.
 - If lining could not be repaired, tank was permanently closed.

UST-9d. Release Detection

This information generally applies:

- For purposes of EPA release detection requirements, the portion of the tank that routinely contains product does not typically include vent pipes; fill pipes, including remote fill pipes; and fittings on top of the tank, as long as the UST system is in compliance with overfill prevention requirements.
- If documentation regarding release detection equipment is not on site, possible sources of information are:
 - NWGLDE
 - Equipment manufacturer
- For containment sump testing, owners only have to test if they are using the containment sump for release detection.
- For UST systems in temporary closure, verify that UST systems containing product comply with release detection requirements.
 - Release detection equipment testing is not required as long as the UST system is empty. [(280.70(a)]
- For hazardous substance UST systems, where applicable, look for interstitial monitoring for both piping and tank.
 - Secondary containment with interstitial monitoring for all hazardous substance USTs, there is no variance to use other methods, according to date established by the implementing agency.

Release Detection Method Presence And Performance Requirements

Element a: Determine that appropriate release detection is: present, operating properly, meets specific performance standards.

- Appropriate release detection method is present. [280.40(a)]
 - Appropriate use of release detection equipment depends on relevant compliance deadlines established by the implementing agency, such as its requirement for secondary containment with interstitial monitoring.
- Release detection equipment is operational, meaning it is able to detect a release from any portion of the system that routinely contains product. [(280.40(a)(1)]
- Release detection system meets specific performance standards in §§ 280.43 or 280.44, or subpart K. [(280.40(a)(3)]
- UST systems containing product and in temporary closure comply with release detection requirements. [280.70(a)]
 - Release detection equipment testing is not required as long as the UST system is empty. [(280.70(a)]
- Hazardous substance UST systems meet release detection secondary containment requirements or, for older USTs, are otherwise approved by the implementing agency. [280.42(a) and 280.42(e)]
- Verify an appropriate release detection method is being used as allowed by implementing agency's compliance dates. Some, but not all key concerns are listed by individual release detection method below.

- *Inventory control* – to check that inventory control is being properly performed, review records for improper recording, data collection, and reconciliation activities.
 - Collect inventory data for all days the facility was in operation, either dispensing or conducting deliveries.
 - Height to volume should be properly translated.
 - Height data should show approximately 50% of measurements using 1/8-inch increments.
 - Check the stick for proper length, proper increments, and good condition. Stick should be unbroken and include the button, or its bottom portion.
 - Check that proper tank conversion chart is being used; chart must be appropriate to the size of the tank used.
 - Ensure the facility is not using inventory control with tank tightness testing beyond the 10-year deadline established by the implementing agency.

- *Automatic tank gauging* – these verification procedures apply to the automatic tank gauging (ATG) system used in static test mode and as continuous in-tank leak detection (CITLD).
 - To determine proper setup, check the report of the leak detection test to determine that:
 - Leak rate is appropriate.
 - Correct tank size is programmed into ATG.
 - Check the report of the leak detection test to determine it adheres to specifications listed by sources such as NWGLDE:
 - Test period sufficient.
 - Test capacity appropriate, for example at least 50% full.

- Size of tank meets equipment limitations.
 - Determine the level of product in the tank at the time of test to ensure that it is close to the normal high in the tank as determined from the inventory monitoring records.
 - Be aware that unless you are properly trained, tampering with the ATG is not recommended. Regardless of training, exercise care so you don't inadvertently reprogram or negatively affect the ATG's operation.
 - These additional verification procedures are specific to ATGs used for CITLD and apply to both subcategories of continuous automatic tank gauging and continual reconciliation.
 - Check that ATG is running acceptable software enabling release detection testing on an uninterrupted basis or operating within a process that allows the system to gather incremental measurements to determine a leak.
 - Ensure pass or fail result within 30-day period. Inconclusive result means release detection requirement not met.
- *Manual tank gauging*
 - Check the stick for proper length, proper increments, and good condition. Stick should be unbroken and include the button. Reference EPA's publication on manual tank gauging <https://www.epa.gov/ust/manual-tank-gauging-small-underground-storage-tanks>.
- *Tightness testing*
 - Check the report to determine it adheres to specifications listed by sources such as NWGLDE.
- *Groundwater and vapor monitoring*
 - Site assessment is available for life of method use and signed by P.E., P.G., or equivalent, according to date established by the implementing agency.
 - Verify site assessment is available and shows wells properly placed and constructed.
 - Ensure layout of the monitoring wells would detect a release from any portion of the tank system.
 - Check inside of monitoring well to determine if well is appropriately screened.
 - Check to see if well is screened at proper depth for groundwater monitoring. Proper depth is site specific.
 - Water level should be below screening to allow enough headspace for product phase change.
- *Interstitial monitoring of tank and piping*
 - Visually inspect, if accessible. Look for obvious degradation of the tank top sump, or piping interstice, and for water intrusion into the tank interstice or the tank top sump.
 - Ensure the float sensor, if used, is installed correctly per manufacturer's instructions; it is typically vertical and at the bottom of the sump. Sensor should be raised to an acceptable level, but not beyond.
 - Verifying sensor position does not require removing the UST system sensors.
 - The presence of water indicates a problem. At best, the water is from surface run-off, which still shows that the secondary containment system is not tight enough to prohibit water intrusion. At worst, water indicates there is a breach allowing groundwater intrusion.

- If the presence of water renders the release detection method inoperable so that a release could go undetected for more than 30 days, the compliance measure is not met.
 - Ensure interstitial monitoring is primary release detection method according to secondary containment with interstitial monitoring requirement date established by the implementing agency.
- *Statistical inventory reconciliation* – check report to determine that sufficient amount of data was used to perform leak check.
 - Ensure only quantitative methods are used according to date established by implementing agency. Qualitative methods with simply an indication of pass or fail are unacceptable.
 - Inventory data can be obtained manually with gauge stick or from ATG.
 - Report must indicate leak rate threshold based on data analyzed and cannot exceed one-half the minimum detectable leak rate.
 - Data collection, data delivery to vendor, analysis, and receipt of report determining pass or fail leak status are required within 30-day monitoring period.
- *Automatic line leak detectors on pressurized piping* – visually verify presence of automatic line leak detector (ALLD) or obtain written proof or affidavit from contractor that ALLD is present.
 - During visual inspection, look for either a mechanical line leak detector (MLLD) on the submersible pump head or an electronic line leak detector (ELLD) located anywhere in line.
 - ELLD will also have a console inside the office. When looking at the console, check to ensure there is an ELLD connected and tests are performed. If there is no visual evidence of leak detection equipment, look for the annual operability test report.
 - Ensure the ALLD is situated so that the entire piping system is covered.
 - Ensure the MLLD is product appropriate where necessary, for example, diesel Red Jacket FX series on a diesel system.
 - Ensure ALLD with interstitial monitoring for piping is the primary method of release detection because annual line tightness test with just ALLD is no longer allowed per date of secondary containment with interstitial monitoring established by the implementing agency.

Performing Release Detection Monitoring And Recordkeeping

Element b: Tanks and piping are monitored monthly or a periodic line tightness test is performed for releases, and owners must have available the records for the two most recent consecutive months and for 10 of the last 12 months. [280.41(a) & (b) and 280.45(b)]

- Crosscheck walkthrough inspections records to ensure records of release detection testing, including monthly monitoring, are reviewed.
- Obtain previous records from facility.
- Search ATG memory as applicable.

Element c: Electronic and mechanical release detection equipment are tested at least annually for proper operation and records are maintained for 3 years. [280.40(a)(3) and 280.45(b)(1)]

- Equipment includes ATG and other release detection system controllers, probes, sensors, ALLD, vacuum pumps, pressure gauges, and hand-held electronic sampling.
- Ensure test has been conducted within the last year according to requirements developed by the equipment manufacturer, a code of practice such as Petroleum Equipment Institute (PEI) RP 1200, or implementing agency requirements.
- Ensure records for current test and the two previous tests, or three total tests if counting current, are available. For ALLD test, ensure leak simulation to verify performance standard of 3 gallons per hour at 10 pounds per square inch line pressure within 1 hour is met.

Element d: Containment sumps used for interstitial monitoring of piping are tested at least every 3 years. [280.35]

- Ensure test has been conducted within the last 3 years according to requirements developed by the sump manufacturer, a code of practice such as Petroleum Equipment Institute (PEI) RP 1200, or implementing agency requirements.
- Review records.
- If monitoring integrity of both walls at least annually instead of testing every 3 years, then verify documentation of double wall and periodic monitoring.

Element e: Implementing agency has been notified of suspected release as required. [(280.40(b))]

- Non-passing results reported and resolved according to implementing agency's directions. [280.40(b)]
- Check indications of past or current suspected releases, such as ATG console alarm history with implementing agency records.

Technical Compliance Rate

UST-9e. Combined Measure: Technical Compliance Rate

Determine the technical compliance rate by looking at the spill prevention, overfill prevention, corrosion protection, and release detection measures. In order to be in compliance with the combined measure, the facility must be in compliance with UST measures 9a-9d.

UST Compliance Performance Measures Not Included In The Technical Compliance Rate

For each UST measure, remember to count compliance at the facility.

UST-10. Operator Training

Ensure Class A and B operators are properly trained.

- Class A and B operators properly complete initial training. [280.240 – 280.243]
- Class A and B operators are properly re-trained. [280.244]
- Documentation of training is available. [280.245]
- Verify Class A and B operators were trained.
- Verify records are properly maintained, including through databases.

UST-11. Financial Responsibility

- Verify owner or operator demonstrates financial responsibility (FR).
- Verify wording in FR documents has not been altered from the required language in the FR regulation, per subpart H.
- Verify owner's FR includes both third party liability and cleanup coverage; ensure that coverage is the correct amount.
 - Some state funds may not provide third party liability coverage and may not provide required first dollar coverage for a deductible. Insurance policies may be written to provide only third party, only cleanup coverage, or both.
- Verify all USTs on site or registered with the implementing agency are included on the FR documents.
- For insurance, verify that the policy provides required first dollar coverage and there is no self-insured retention. A policy with self-insured retention is only a partial FR mechanism.
- This measure is unique in that the implementing agency can verify if a facility complies with FR at the time the implementing agency determines compliance with FR, rather than at the time of a facility inspection. Some implementing agencies do not determine compliance with FR during the inspection.
- FR must still be determined based on the initial document reviewed, either at the time of submission of FR information to the implementing agency or the time of inspection. If the implementing agency works with an owner to come into compliance after the initial submission, the facility is not in compliance with the FR measure.

UST-12. Walkthrough Inspections

- Ensure system is operating properly by conducting applicable monthly and annual walkthrough inspections. [280.36(a)]
 - Conduct monthly walkthrough inspection according to federal UST regulation. [280.36(a)]

- Maintain records of operation and maintenance monthly walkthrough inspections; owners must have records for the two most recent consecutive months and for 10 of the last 12 months. [280.36(b)].
- Conduct annual walkthrough inspection according to federal UST regulation. [280.36(a)]
- Maintain records of operation and maintenance annual walkthrough inspections; owners must have record of last inspection. [280.36(b)].
- Verify a walkthrough inspection was conducted every 30 days that, at a minimum, checked the equipment listed below. Exception to every 30 days: spill prevention equipment at UST systems receiving deliveries at intervals greater than every 30 days may be checked prior to each delivery.
 - Spill prevention equipment – visually check for damage; remove liquid or debris; check for and remove obstructions in the fill pipe; check the fill cap to make sure it is securely on the fill pipe; and, for double-walled spill prevention equipment with interstitial monitoring, check for a leak in the interstitial area.
 - Release detection equipment – check to make sure the release detection equipment is operating with no alarms or other unusual operating conditions present; and ensure records of release detection testing, which includes monthly monitoring, are reviewed and current.
 - Walkthrough conducted according to a standard code of practice developed by a nationally recognized association or independent testing laboratory such as PEI PR 900.
- Verify at least 10 months of records are maintained for one year. If spill buckets are checked less than once a month, verify records of deliveries.
- Verify owner conducted a walkthrough inspection annually that, at a minimum, checked the equipment listed below.
 - Sumps – visually check for damage, leaks to the containment area, or releases to the environment; remove liquid in contained sumps or debris; and, for double-walled sumps with interstitial monitoring, check for a leak in the interstitial area.
 - Hand held release detection equipment – check devices such as tank gauge sticks or groundwater bailers for operability and serviceability.
 - Walkthrough conducted according to a standard code of practice developed by a nationally recognized association or independent testing laboratory such as PEI PR 900.
- Verify records are maintained for one year.

For More Information

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