

DEPARTMENT OF ENVIRONMENTAL PROTECTION
Bureau of Environmental Cleanup and Brownfields

DOCUMENT NUMBER: 263-3120-003

TITLE: Guidelines for Conducting Underground Storage Tank (UST) Facility Operations Inspections (FOI)

EFFECTIVE DATE: September 8, 2012

AUTHORITY: The State Storage Tank and Spill Prevention Act, P.L. 169, No. 32 of 1989, as amended (Tank Act) and 25 Pa. Code, Chapter 245 (Storage Tank Regulations).

POLICY: It is the policy of the Department of Environmental Protection (DEP) to carry out the provisions of the Tank Act and related Storage Tank Regulations.

PURPOSE: Storage Tank Regulations require periodic inspection of the operation of UST facilities. The purposes of the inspections are to determine if a facility's USTs have been installed and are being operated, and maintained in accordance with Storage Tank Regulations. Third-party inspectors, certified by DEP, perform routine FOI. This guidance clarifies the procedures certified inspectors should follow when completing a UST FOI.

APPLICABILITY: This guidance is applicable to certified inspectors of UST facilities. It may also be useful to UST owner/operators to check their inspection reports for conformity to DEP standards.

DISCLAIMER: The policies and procedures outlined in this guidance are intended to supplement existing requirements. Nothing in the policies or procedures shall affect regulatory requirements.

The policies and procedures herein are not an adjudication or a regulation. There is no intent on the part of DEP to give the rules in these policies that weight or deference. This document establishes the framework within which DEP will exercise its administrative discretion in the future. DEP reserves the discretion to deviate from this policy statement if circumstances warrant.

PAGE LENGTH: 26 pages

Guidelines for Conducting UST Facility Operations Inspections

DEFINITIONS, TERMS AND ABBREVIATIONS. See the Storage Tank Regulations, section 245.1 for other terms not specifically defined in this section.

ACT-100® tank – A type of tank having a thick coating (usually fiberglass reinforced plastic (FRP) or urethane) that adheres to the steel tank very tightly. There is no interstitial space between the tank and coating and there are **no anodes** attached. Buffhide, High-glass® and FibreThane™ are examples of ACT-100® tanks. Double wall steel tanks with an ACT-100® coating are considered jacketed tanks for purposes of an FOI.

Cathodic protection tester – A person who can demonstrate an understanding of the principles and measurements of common types of cathodic protection systems as applied to buried or submerged metal piping and tank systems. At a minimum, the person shall have education and experience in soil resistivity, stray current, structure to soil potential and component electrical isolation measurements of buried metal piping and tank systems. Acceptable qualifications for cathodic protection testers include, but are not limited to: Steel Tank Institute Cathodic Protection Tester Certification, International Code Council U-4 UST Cathodic Protection Tester Certification, field training provided by a National Association of Corrosion Engineers (NACE)-Certified Tester with proof of training, and NACE International certification categories of Cathodic Protection Tester, Cathodic Protection Technician, Cathodic Protection Technologist, and Cathodic Protection Specialist.

Combination of [release detection] methods – In some instances more than one method of release detection (RD) may be necessary to satisfy the tank and piping RD requirements. Some methods require more than one test or application of equipment to be complete as indicated in the following examples.

- Manual tank gauging and tank tightness testing (see table in §245.444(2)(iv) for when tightness testing is required).
- Line leak detection and annual line test or monthly monitoring.

Also, an owner may choose to change methodologies used during a given period. Therefore, a combination of methods is implemented for that period. All parts of a combination of methods must be completed and performed correctly for the facility to be compliant for RD.

Compatible – The ability of two or more substances to maintain their respective physical and chemical properties upon contact with one another for the design life of the tank system under conditions likely to be encountered in the tank system. “Examples: steel components are compatible with common petroleum products but polyvinyl chloride (PVC) components are not” (*added guidance for clarification*).

Confirmed contamination – Includes, but is not limited to, regulated substance (product)-stained or product-saturated soil or backfill, ponded product, free product or sheen on ponded water, free product or sheen on the groundwater surface or free product or sheen on surface water. Also refer to “Reportable release” found at §245.1 (*relating to definitions*).

Consumer style dispenser – A pump and nozzle combination that sits directly above a UST on a riser pipe (such as some Gasboy dispensers). A suction stub runs through the riser and into the tank. There is

no sheet metal enclosure to this style dispenser; components are exposed to the air. Because of the shape of a few early models these have sometimes been referred to as a “lollipop” style.

Corrosion expert – A person who, by reason of thorough knowledge of the physical sciences and the principles of engineering and mathematics acquired by a professional education and related practical experience, is qualified to engage in the practice of corrosion control on buried or submerged metal piping systems and metal tanks. The person shall be accredited or certified as being qualified by the National Association of Corrosion Engineers – NACE certified Corrosion Specialists or Cathodic Protection Specialists – or be a registered professional engineer who has education and experience in corrosion control of buried or submerged metal piping systems and metal tanks. (Additional guidance provided by NACE International.)

Corrosion protection (CP) – The protection of metal “tank system components” from deterioration. The deterioration may be due to a natural electrochemical reaction between the metal and the soil, backfill or other electrolyte, or because of stray direct currents “or natural phenomenon related to the component’s installation environment. CP is required for tanks, and piping that routinely contains product and is in contact with ground or an electrolyte” (*added guidance for clarification*). (See also “Metallic.”)

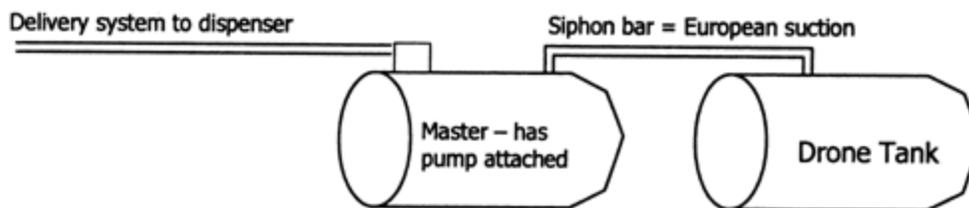
- Double walled steel piping – When the primary pipe is not in contact with the ground it does not require additional CP. Properly booted flex connectors and consumer style dispenser piping are included in this piping category for FOI reporting purposes. Booted flex connectors should be maintained in substantially dry conditions.
- Field applied coatings – There are no perfect coatings. Flaws in a coating will accelerate corrosion in the area of the problem. When CP is required, wrapping with tape alone is **not** considered adequate CP.
- The Department will accept coating alone for single, heavy (schedule 40 or heavier) metal fittings at the tank top or dispenser, such as (double tap) bushings and elbows, if the coating is recognized by the tank manufacturer, NACE International or the Steel Tank Institute (STI) for field application. The surface must be prepared and the coating applied in accordance with the coating manufacturer’s instructions. Galvanizing is **not** recognized as adequate CP for underground piping. Galvanized piping without additional CP and in contact with the ground is considered to be bare steel for compliance and inspection report purposes.

Day tanks – DEP has decided (after consultation with the U.S. Environmental Protection Agency (EPA)) that tanks which hold regulated substances for a short period of time or as an intermediate stop on the way to a final use, are regulated based on the final use of the substance involved.

- An underground storage tank (UST) that stores diesel and feeds a day tank for an emergency generator would be regulated (if larger than 110 gallons), but deferred/exempt from RD – based on the emergency generator use.
- A UST, which holds #2 fuel oil for transfer to an aboveground storage tank (AST) from which delivery trucks are loaded, is a regulated tank because the end use (distribution) is regulated.

Drone tank – A tank that has only a siphon bar connecting it to another tank for product piping; pump and dispensing piping are connected to the other tank; only the “master” has a functional pump. The drone **does** have regulated piping (the siphon bar) connected to it. The siphon bar is considered a

European or safe suction system. Note: many systems have a copper line connecting the pump on the master to the high point of the siphon bar at the drone tank. This copper line is also considered a European suction line and must be protected from corrosion if in contact with the ground. For purposes of the FOI, treat the master and each drone as separate UST systems.



Dual use tanks – A tank that is used in both a regulated and an unregulated way. Dual use tanks are regulated in the same manner as the regulated use. Piping and appurtenances associated with the regulated use are regulated. They are required to have periodic facility operations inspections and must meet applicable technical requirements in Chapter 245.

Electrolyte – A fluid such as water that contains dissolved salts or minerals that allow the fluid to conduct electricity and thus facilitate deterioration by corrosion.

Emergency generator – A machine run by an engine fueled by a regulated substance for providing critical systems during the loss of normal power. For purposes of the Storage Tank Regulations an emergency firewater pump is a type of emergency generator.

Flexible joints – Components/fittings included in piping systems near the tank and dispenser to allow for expansion and contraction of the pipe and movement of the soil. Typically these are either steel swing joints or stainless steel flexible connectors (flex connectors).

Flow through process tanks – There are differences in the way a process tank is defined for aboveground and underground storage tank systems. For a UST to receive the process tank exemption it must be an integral part of a **production** process (see 40 CFR §280.12).

Galvanically protected tank – Steel tanks that have sacrificial anodes are cathodically (galvanic) protected tanks. Examples of cathodically protected tanks are sti-P₃® and High-Life®. The type of coating used by the manufacturer does not change the construction code that the inspector must use. Use code “B” for a single wall, galvanically protected steel tank. Use code “O” for a double wall, galvanically protected steel tank. Galvanically protected tanks require periodic CP evaluations every 3 years.

Ground – Includes soil, backfill (material used around the tank and piping such as sand, 1B stone and pea gravel) and paving materials.

Heating oil consumed on the premises – There are small chemical differences between diesel and fuel oil. Generally, the owner must be receiving (the delivery slip indicates) “heating oil” or specific grades of “fuel oil” to receive the heating oil exemption. (Substitutes for heating oil may meet the requirements for this exemption under some circumstances.) Consumption on the premises where stored is not limited to “space heating” as of September 1996. Also refer to “*Consumptive use*” found at §245.1.

Improperly closed tanks – A regulated tank that is not in use, not properly inerted and, when required, a site assessment and closure report were not performed; or a substandard UST that has been temporarily closed more than one year without DEP permission (see §245.451(c)).

Jacketed tank – A steel primary tank with a thick plastic coating that does not stick to the tank (jacket). There is a space (usually small) between the plastic jacket and the steel tank (an interstice) that can be used for RD. Use construction code “G” for jacketed tanks. Examples of jacketed tanks are the Glasteel II™, Glasteel™ double wall UST, Permatank® and Total Containment tank.

Kerosene – Kerosene is a petroleum distillate and therefore is a regulated substance. It is **not** a “motor fuel.” It is also **not** a “heating oil,” but may qualify as a substitute for heating oil when used solely for heating purposes on the premises where stored.

Metallic – Includes tank system components made of carbon steel, stainless steel, copper and other metals. Metallic components that routinely contain regulated substance must either be isolated from contact with the ground or protected from corrosion in an appropriate manner. When CP is added in the field, the protection system must be designed by a corrosion expert. There are generic “expert” designs for protecting some metallic components; DEP is not aware of any generic designs for the cathodic protection of copper lines.

- To be considered protected, copper components must meet the protection level specified in the corrosion expert’s design.
- Stainless steel, under many conditions, when placed in the ground, will corrode even faster than mild carbon steel. In the absence of an expert’s design specifying the acceptable protection level, stainless steel should have a structure to soil potential of -850 to -1000 mV to be considered protected (a more negative potential can cause metal stress problems).

Manual tank gauging – A recognized method of RD for small USTs, third-party certified by the American Petroleum Institute. A good source of information for owners and operators is the EPA booklet *Manual Tank Gauging For Small Underground Storage Tanks*. See Appendix 1 for tank size limitations.

Monthly monitoring – Completing a method specified in §245.444(3)-(9) at least once every 30 days. Completing a method includes checking the results each month to determine if any additional action is necessary and documenting the results. A history printout from a piece of equipment such as an automatic tank gauge (ATG) or a summary document of tests performed by a test vendor may be used by the tank owner to demonstrate that RD was performed and periodic testing was conducted. It is still required that the owner/operator properly address and promptly investigate each RD alarm or failed test. When the tank owner/operator provides histories or summaries that demonstrate regulatory requirements were met and tests were conducted at the proper times with passing results; the RD method may be marked compliant for the time period covered by the history or summary. When histories or summaries are used to determine RD compliance, examine these documents carefully and mark the compliance as appropriate. When the owner/operator is unable to provide or generate records, but the inspector generates the history or summary documents during the FOI, the inspector should mark the facility noncompliant. The inspector should then review the documents and note the results in the comment section only. Explain to the owner that, although history printouts and summary documents may demonstrate RD compliance, the tank operator must provide RD records and monitor RD each month.

Also, DEP strongly recommends that separate documents be generated and reviewed each month, and the individual records be kept, readily available, for at least one year.

Oil-water separators – A tank system with internal components that facilitates the separation of oil from water in a mixed input stream. All oil-water separators are unregulated by DEP as waste water treatment tanks, although some may still be federally regulated. USTs connected to oil-water separators, which collect the used oil, continue to be regulated by DEP.

Overfill prevention – A device used to prevent overfills. There are three types of devices recognized by DEP and EPA; each has specific set points and system requirements. The form of overfill installed must be used in accordance with manufacturer's recommendations to function properly in the particular UST system.

- Delivery flow shut off, also known as a drop tube shutoff device or flapper valve: must stop the flow of product at or before 95% of tank capacity or before any fittings at the top of the tank are wetted by product. Some devices are made for gravity fills and some for pressure fills; the appropriate device must be installed in the system.
- Overfill (High level) alarm: either an audible or visual alarm may be used (a combination of both is recommended). The alarm must activate at or before 90% of tank capacity or at least one minute before an overfill would occur. (Note: A standard gravity drop produces flow rates on the order of 400 gpm.) Audible alarms must be able to be heard and visual alarms able to be seen by the delivery attendant. See also "Whistle-stop vents."
- Vent restriction, ball float valve: must begin restricting the flow of product into a tank at or before 90% of tank capacity or 30 minutes before an overfill would occur. (Note: A different assembly is needed to meet the 30-minute criterion.) See the FOI form instructions for known ball float valve limitations.

Pfa – The probability that a RD test will fail an acceptable system. The technical regulations specify that most methods be third party certified to fail no more than 5 tight systems in every 100 tight systems tested.

Pd – The probability that a RD test will fail a system that may release regulated substance. The technical regulations specify that most methods be third party certified to detect at least 95 leaking systems in every 100 leaking systems tested.

Pumping system – Denotes the method used for removing regulated substance from a UST. The piping associated with the pump system routinely contains product – usually, only the piping between the tank and dispenser.

- No pumping system – Tanks that are emptied only with a vacuum truck are considered to have no pumping system. Consumer style (e.g. Gasboy) pumps do **not** fit this category.
- Pressurized systems – A system commonly using a submerged, centrifugal pump located inside the tank. The product is essentially "pushed" through the piping to the point of end use, such as the dispenser at a service station. If a hole or break occurs in the pressurized pipe lines, very large releases can occur rapidly because the pump continues to push the product through. The actual leak rate will depend on the amount of positive pressure on the lines. The higher the

pressure, the higher the leak rate. Pressurized systems generally are used at medium to high volume facilities because of their faster rate of product delivery.

- Gravity fed system – Systems are **not** gravity fed because they are **filled** by gravity. In a gravity system the tank top is higher than the dispenser. Because gravity fed systems operate above atmospheric pressure, they are pressure type systems and require two forms of (RD. For gravity systems with suction pump dispensers a solenoid shutoff or anti-siphon valve at the tank is considered to perform the large release (LLD) function.
- Suction system – A system where the pump is remote from the tank: by reducing pressure in the piping, atmospheric pressure forces regulated substance to the pump. There are two types of suction systems.
 - An Exempt, European or Safe suction system must meet all of the requirements in the Storage Tank Regulations for exemption from performing additional piping RD. These systems have no more than one check valve. When a check valve does exist, it is located directly below and as close to the pump as possible. A siphon bar on a Drone tank qualifies as an exempt suction system. A tank system that cannot be determined to meet the Safe requirements must be treated as an American system for RD purposes.
 - American suction systems do not meet the regulatory requirements for a piping RD exemption and require periodic RD. An American system has more than one check valve or the check valve is located away from the pump.
 - Supply and return lines are present on some systems. Even though the return line operates under a slight pressure, the department considers a paired supply and return line as an American suction system for RD purposes.

Readily available – When applied to RD, CP and maintenance records, means that documentation is physically located at the facility or another easily accessed site and can be reviewed by the inspector. This may include documents such as third-party certification of a RD method, which can be viewed on the web (see Appendix 2).

Repair – A component that was “repaired” must be tested to ensure that it is leak free after the repair is complete. CP systems must be tested within six months after a cathodically protected tank system is repaired, or when any component of the CP system is disturbed for other reasons.

Routinely contains product – Those portions of a tank system that can contain product for more than a brief period of time, during normal operations. This does not include fill or vent pipes. Fill pipes (including remote fills) are not considered to routinely hold product. Likewise, vent pipes (including stage II vapor lines) may contain limited liquid product, but are not considered to routinely hold product. Siphon bars, and distribution piping between the tanks and dispensing unit do routinely contain product. (It is rare for an underground tank to have no piping connected that routinely contains product.)

- Components that routinely contain product and are in contact with the ground must be protected from corrosion.

- Piping that is underground and routinely contains product must have a form of RD specified in the technical regulations. The construction is the RD method of an exempt suction piping system. (See Appendix 1.)

Satellite dispenser – A dispensing unit connected to a master dispenser that allows the filling of saddle-tanks on opposite sides of a vehicle without a separate transaction authorization. Typically piping will run underground between the master and satellite dispensers and routinely contains product. There are two common methods of running piping to satellite dispensers in use: one taps into the master dispenser piping between the meter and isolation solenoid valve and the other after the isolation solenoid. Satellite piping that connects after the master isolation solenoid valve (common to older systems) is very difficult to test for possible releases. Piping to the satellite dispenser is pressurized and requires RD appropriate to pressure systems.

Secondary containment – An additional layer of impervious material creating a space in which a release of a regulated substance from a storage tank may be detected before it enters the environment. “Secondary containment must be compatible with and impermeable (permeation $\leq 10^{-6}$ cm/sec) to the product stored” (*added guidance from §245.444(7) for clarification*).

Spill containment – A containment structure, usually taking the form of a “bucket” to catch drips at the completion of the tank filling process when the delivery hose is disconnected. There is no minimum size specified in the technical regulations. Note: a typical delivery hose may contain up to 15 gallons of product.

Suspected contamination – Includes, but is not limited to, an unusual level of vapors, erratic behavior of product dispensing equipment, RD results indicating a release (other than “pass”), equipment in alarm mode, the discovery of holes in the storage tank or piping, the presence of more than a small amount of water in the bottom of the tank or an unexplained change in the amount of water or product in the tank. (See §245.132(a)(4) and reference §245.304(a).)

Suspected release investigation – See §245.304 and Corrective Action Process fact sheet, “Investigation of suspected releases” (2550-FS-DEP1711).

Temporary Out of Service (TOS) – A tank system that is not currently being operated – no product being added or dispensed and tank is empty, i.e. all product has been removed so that no more than 1 inch of sludge or residue remains in the tank.

Total secondary containment – Includes the tank, underground and dispensing piping (except vent lines), and spill containment. To qualify as a system with *Total Secondary Containment*, an inspector should determine whether or not a facility has the following tank components:

1. Double wall tank (300° or 360° outer wall, or completely jacketed) or tank (including older, single wall) with an excavation liner sealed on all 6 sides;
2. Double wall piping (includes suction systems & siphon bars) or older systems with an excavation liner that includes piping;
3. Spill containment (buckets);
4. Sumps at the tank where piping attaches that routinely contains product; and

5. Dispenser containment (pan/sump). For open, consumer style dispensers a concrete pad under the dispenser that allows visual determination of a dispenser release can take the place of a dispenser sump.

Underground or below the ground surface – Below an imaginary curve that represents the earth’s surface without regard to manmade holes. The under-dispenser dividing line is the shear section of the crash, shear or breakaway valve; this should be mounted even with the top of the island – the surrounding surface. (See also “*Beneath the surface of the ground,*” in §245.1.)

Underground used oil tanks – All tanks regulated under the federal storage tank program are also regulated by DEP, Storage Tanks Division. Used oil tanks have been continuously regulated by EPA since 1985, however, Pennsylvania storage tank program jurisdiction is from July 9, 1996, with the amendment of the Tank Act. All underground used oil tanks **not** used exclusively for heating are regulated and should be listed on the current Storage Tank Registration/Permit Certificate and inspected during a facility operations inspection. Most used oil tanks do not have piping that routinely contains product.

Whistle-stop vents (also known as whistle sticks or deep-fill whistle tubes) – Are sometimes used with very small USTs that have 2-inch fill pipes such as the small fuel tanks maintained by municipalities. A tight-fill connection is required for proper operation. The whistle must be audible to the delivery truck operator over the noise that is commonly present at the facility. These devices must be set at or below 90% of the tank’s capacity, and installed and used per the manufacturer’s instructions (every time the tank is filled) to provide proper protection. When not permanently installed, a written procedure is highly recommended so that overfill protection is present during each delivery as required. Whistle tube length is critical to preventing overfills.

Although a whistle stick supplier indicated that an adapter is available for a 4” fill, this is not a desirable situation. An alternative to the whistle-stop vent for a UST with a 4” fill that receives pressurized (pumped) deliveries is the overfill prevention valves designed to work in the fill tube of a small AST that receives product from a pump truck.

When whistle sticks are used with class I liquids, it is imperative that vapors be discharged in accordance with fire safety rules to minimize the possibility of fire and explosion.

GENERAL

DEP uses the information on the Underground Storage Tank Facility Operations Inspection (FOI) form (2630-FM-BECB501a) for a variety of reasons, including determining UST facility compliance with regulatory standards, follow-up on noncompliant facilities (including enforcement activities) and reporting to EPA. The information supplied by the certified inspector must be complete, legible, up-to-date and received by DEP within 60 days.

- The latest version of the inspection form as specified by DEP must be used.
- The inspection report must be legible. Use ink that will not run; do **not** use pencil. Print clearly or type the report (except signatures). On the NCR (No Carbon Required or carbonless) version of the form, press hard enough to make all the copies readable.

- The directions contained in the FOI form and instruction document should be followed carefully. Reference to the instructions and this guidance should be made often to ensure complete and consistent inspections. Failure to follow this guidance and the instructions for filling out the FOI form can result in enforcement action against the inspector and their company under the standards of performance provisions in the Storage Tank Regulations (§245.132).
- Original and copies of the report should be distributed as directed in the form instructions. Failure to submit the FOI report form to DEP within 60 days of the inspection can lead to a fine and suspension of the inspector's certification.

The certified inspector must have verifiable proof, not just the owner's word or self-generated documentation, for the tank attribute information that is supplied on the inspection report form. The inspector must verify information reported on the inspection form through personal observation, or from other sources such as construction documents, certified installer information or other tangible evidence.

The inspection form is an official document. The inspector signs the statement at the bottom of the first page to indicate that the information is true, accurate and complete to the best of their knowledge and belief. Reports that contain obviously wrong information can lead to enforcement actions by DEP against the inspector and their company. The inspector needs to take reasonable care, such as examining photographs of the installation and reviewing RD records and as-built drawings, and examining the storage tank system (to the extent practicable), to ensure complete and accurate information is provided to DEP. Do not depend on previous inspection reports for tank system information, since many things can and do change between inspector visits.

Because the report is an official document, when minor corrections to the report form are needed, draw a single line through the problem entry, write the correct information, legibly, near by and initial next to the change.

DEP occasionally receives FOI report forms with errors that could have been easily corrected prior to their submission. Inspectors should check reports thoroughly prior to submitting them, mark applicable check boxes, explain "other" entries and entries marked "N/A" in the comment section, fill in the tables completely on pages 1 and 2 for each UST, and sign the form.

DEP's website has an electronic version (MS Word format) of the underground facility inspection form that can be electronically filled in (less signatures), then printed, signed and submitted. Alternately, a carbonless version of the DEP form is available for the inspector's use. Carbonless forms may be requested from the nearest DEP regional office.

This document, the FOI form instructions and the *Inspector References* provided during the Underground Storage Tank Inspector's (IUM) training or directly to each inspector should be reviewed often to ensure DEP policy on inspections is followed. Documents listed in or provided with the *Inspector References* should be available for each IUM to consult during an FOI.

Storage tank "Fact Sheets" and other publications are available through the DEP website (<http://www.dep.state.pa.us>, keyword: Storage Tanks and select appropriate link) or by calling the Division of Storage Tanks, Customer Service Unit, Harrisburg, at 717-772-5599 or 1-800-42-TANKS (in PA only).

When DEP requests a follow-up report, fill out the new report completely unless the appropriate regional office provides other guidance. Information that has not changed may be copied from the original report.

An inspector may use the DEP form for an informal audit or inspection that is not required by DEP, however, the inspector should **not** sign the form since all authenticated inspection forms are official documents that must be submitted to DEP.

Information bullets on the inspection report are reminders to the inspector. For example, a bullet on the first page of the report reminds the inspectors that when they are discussing financial responsibility with a tank owner that state agencies are not required to participate in the Underground Storage Tank Indemnification Fund (USTIF).

Contamination found during a certified activity such as an FOI – As each portion of the tank system is inspected/checked, a visual check by the inspector for contamination is considered necessary to complete a thorough inspection under the standards of performance contained within the Storage Tank Regulations. Open dispenser covers, tank system sump(s) and fill covers to check system components and to look for spills and releases. An inspector must submit a “Notification of Contamination” form (2550-FM-BWM0082) to the appropriate DEP regional office within 48 hours when suspected or confirmed contamination is observed; mark “Facility Inspection” at the top of the page on the Notification of Contamination report.

Retention of documentation – The inspector’s copy of the completed FOI report and any essential field notes must be retained for ten years following submission of the report to DEP. Records should be retained at a readily accessible location and must be provided to DEP upon request.

Questions concerning how to fill out the report or a specific site situation may be directed to the UST Technical Unit in the DEP Central Office, Harrisburg or the appropriate regional office.

PROCEDURES

I. Preparing for the Inspection.

A. Contact the owner/operator. It is very important that the owner/operator of the storage tank system understands what the inspector and DEP expect of them. Prior to the inspection, the inspector should contact the owner/operator to:

1. Discuss the records that you are required to examine. A written list of records needed is an effective tool to aid the owner in gathering the necessary records.
2. Discuss access to the facility.
3. Determine the identity of the owner/operator representative or contact that will be available at the facility on the day of the inspection.
4. Discuss the owner/operator’s responsibility to conduct and document suspected release investigations. This is especially critical when statistical inventory reconciliation (SIR) is the chosen RD methodology.

5. Discuss financial responsibility with the owner/operator. The fact sheet, “Financial responsibility for underground storage tanks” (2570-FS-DEP1640) can be used to provide information. The inspector should explain that the owner must pay USTIF capacity fees, and throughput fees not paid by their product distributor and failure to pay fees may jeopardize coverage in the event of a release. Inspectors are not required to verify that USTIF fees have been paid. USTIF routinely follows up on unpaid fees and refers delinquent accounts to the Office of the Attorney General for collection as appropriate.
- B. Contact the owner’s on-site representative. Prior to the inspection, the inspector should contact the tank system operator or on-site representative. This person should be knowledgeable of the tank systems and must be able to demonstrate RD monitoring. The inspector should explain to the on-site representative:
1. That access to the entire tank system is needed.
 2. That the operation of RD equipment must be observed.
- II. Preliminary document examination. A trip to a separate record storage facility may be necessary to complete this step; document examination is necessary (**not** optional). The inspector should make notes during the examination of documents to increase accuracy when filling out the FOI report form.
- A. Documentation of system attributes – Many UST system components cannot be seen after installation and often, the inspector must research sources such as receipts for the parts, a certified installer’s written statement or tank handling reports, installation pictures, or as-built drawings to determine tank system attributes. Inspectors may be able to observe the presence of appropriate complementary components such as an extractor fitting in a riser or manway on the tank top, which would indicate the presence of a ball float valve. Inspectors should **not** depend on previous FOI reports. Unsubstantiated information such as owner-generated databases or their verbal confirmation that a device is present in the tank is **not** sufficient.
- B. Construction documents. The inspector should analyze construction documents to:
1. Determine the materials the tank and piping are made of. Ensure the presence of required equipment and system installation testing is documented.
 2. Determine the installation date of the system. If unable to determine the exact date, determine an estimated date and record the estimate in the comment section of the FOI report form.
 3. Assess (see II.A.) if the system was installed properly (according to national standards and manufacturer’s specifications). Pay close attention to construction pictures and as-built drawings. If unable to make a determination as to how the system was installed, describe in the comment section the efforts that were made to make this determination.
 4. Determine if and when upgrades, maintenance and repairs have been performed.

5. Sump testing – Verify that sumps/pans on new systems and those that were repaired recently (see form instructions) were tested liquid-tight.
- C. RD documents. Tanks and underground piping are required to have valid methods or combination of methods for detecting a release (see Appendix 1). One of the inspector's primary functions related to the FOI is to review, analyze and report to DEP on UST RD practices.
1. The inspector should determine dates and types of RD used at the facility for at least the last 12 operating months or since product was first delivered to the UST, whichever is shorter. Pay particular attention to the dates RD methodologies may have changed.
 2. Valid RD records are required for each month a regulated substance has been contained within a UST system. For recently installed tank systems having an initial inspection this may be less than 12 months.
 3. TOS systems must be empty (no more than an inch or 0.3% by weight of the total capacity of residue) within 30 days of the owner/operator reporting the status change to the department. While empty, RD is not required. The last 12 months of records while storing product (operating) should be available for the inspection.
 4. RD methods must be appropriate for the system. The RD method must be used in accordance with manufacturer's documentation and within the limitations listed on the third-party evaluations (see Appendix 2).
 - a. Verify the RD methodologies being used for applicability to installed component size and materials of construction.
 - b. Include satellite dispenser piping in the consideration of Line Testing and Line Leak Detection requirements.
 - c. The National Workgroup on Leak Detection Evaluations list may be consulted to determine limitations. Example: there are very few methodologies that are certified to test manifolded tank systems without breaking the siphon; it is usually necessary to test each tank separately.
 5. Simple logs showing dates of checking, who performed the check and results are adequate for monthly RD methodologies and sump/pan monitoring. For line leak detection methods, simple logs are inadequate to demonstrate that the method was in continuous use.
 6. When a method involves mathematical computation (manual tank gauging and some SIR) the inspector should examine the records not only for their presence, but also for completeness and accuracy. Sufficient records need to be checked to satisfy the inspector that the owner/operator is performing the RD method correctly.

7. RD records include maintenance of equipment. Maintenance items listed in the manufacturer's related technical documentation and any applicable supplementary publication as required (both preventative and corrective) must be performed and documented for a system to be in compliance.
 8. Sump monitoring for maintenance – The inspector should verify that sumps/pans are being checked monthly on new systems and pressure delivery systems that have secondarily contained piping systems. This is **not** part of RD compliance as reported on page 1.
- D. CP documents (when applicable). CP must either be installed at the factory that manufactured the component or designed by a corrosion expert prior to field installation. Tanks and piping that routinely contains product and is in contact with the ground require CP. Metallic tank system components that are connected to an anode system require a CP test. The inspector should examine CP documentation and record applicable information:
1. Determine dates and types of system upgrades.
 2. Note dates and types of tank evaluations used to determine that the tank shell was satisfactory for upgrading. Approved evaluation methods varied somewhat from 1988-1999; any of the methods approved during this time period may be used for the shell evaluation, regardless of when it was conducted.
 3. Examine the corrosion expert's design. Note the date of the design and the system's operating limits. If the original design was misplaced or inadvertently destroyed, the inspector may accept a tightness test, 12 months of passing monthly RD records, and a corrosion expert's favorable evaluation of the system installation and corrosion survey in place of it. Note this evaluation methodology in the comment section of the FOI report form.
 4. Note dates and results of CP inspections, system tests, lining evaluations or operator's monitoring logs for the following:
 - Lined tanks without valid CP must be evaluated 10 years after they were lined, and every 5 years after that. Lining evaluations, including reports, must be conducted in accordance with applicable national industry standards and should follow guidance document 263-3120-001 (Evaluation of underground storage tank liners).
 - Galvanically protected, underground tank system piping and components must have their protection verified in accordance with national standards such as NACE RP-0285 and TM-0101 and be tested (surveyed) every 3 years. When routine FOI is performed at 3-year frequencies (or less), corrosion tests may be accomplished prior to or during the FOI.

Note: Galvanically protected tanks are usually required to be surveyed by a person meeting the definition of "corrosion tester." However, a knowledgeable owner may use a permanently installed CP test station

such as the STI's PP4 to perform periodic testing. The owner must follow the manufacturer's instructions and document each monitoring result. A reading below the national standard must be referred to a corrosion expert for evaluation and correction.

- Impressed current protected, underground tank components must have their protection verified (surveyed) every 3 years in accordance with national standards. When routine FOI are performed at 3-year frequencies (or less), corrosion tests may be accomplished prior to or during the FOI.
- Impressed current systems must be monitored at least once every 60 days by the owner/operator to determine if the system is operating within design limits. Examine the operator's log to determine if the monitoring has been accomplished and compare the results to the original or subsequent corrosion expert's design limitations. Rectifier adjustments must be made under the supervision of a corrosion expert and operating limits should be documented for the owner/operator. If limitations are not available, variations of $\pm 10\%$ from the initial readings should be investigated by a corrosion expert.

- III. The On-site Inspection. The inspector must conduct an on-site inspection of the regulated UST system(s) at the facility. The date the inspector first goes to the facility to observe facility operation or records maintained on-site is the date of the inspection and the date of the certified activity. This is **not** an optional part of the inspection.
- A. Safety. This document does not discuss personal safety procedures for inspectors. Federal and state regulations and related safety guidelines apply during each on-site visit of a facility regulated under the storage tank program. Certified inspectors and their companies (employers) are responsible for establishing necessary personal safety training, practices and procedures, and adhering to applicable safety requirements.
- B. Search the facility for improperly closed tanks. An exhaustive search of a large property is not required. Report, by checking the appropriate box and describing what was observed in the comment section, when indicators such as extra vent pipes, extra fill manways, unused dispensers, etc. are visible in the vicinity of the tank systems being inspected.
- C. Search the facility for unregistered, regulated tanks. When the inspector's property search uncovers a regulated tank system that does not appear on the Storage Tank Registration/Permit Certificate, the tank system must be inspected in the same manner as a registered system. Assign a "working number" to each unregistered, regulated tank and record them in the comment section. The owner/operator must submit a Storage Tank Registration/Permitting Application form (2630-PM-BECB0514) to add the tank to the facility registration. When a nonregulated tank can be confused with a regulated tank (due to product, size and/or location) the inspector should provide information for the tank in the comment section; otherwise, nonregulated tanks do not need to appear on the FOI form.

- D. Registration certificate. The inspector should check (review) the on-site Storage Tank Registration/Permit Certificate (registration certificate or certificate).
1. The Tank Act requires that the certificate be properly posted. At retail facilities the certificate (or a copy) should be in public view. At non-retail facilities, it should be able to be produced upon request.
 2. The certificate should be current.
 3. The inspector should note the tank sequence numbers. The tank numbers on the FOI report must correspond with the sequence numbers on the certificate.
 4. The inspector should check the tank information on the certificate against the inspector's observations made during the preliminary documentation review. The owner/operator is required to submit a Storage Tank Registration/Permitting Application to DEP to correct discrepancies.
- E. Class C operator procedures. The inspector should check for operating procedures. At facilities where retail sale of fuel to the general public occurs or the owner has chosen to have a class C operator present during product dispensing, operating procedures must be available for the class C operator. At other facilities emergency procedures must be posted so that they are visible to equipment operators during product dispensing.
- F. Impressed current rectifier. When an impressed current system is installed, the inspector should check the rectifier and determine if the system is turned on and functioning within design limits on the day of the inspection.
- G. Monitoring wells. The inspector should check monitoring and observation wells to ensure they are properly marked and secured.
- H. The inspector should ask the facility representative to show the inspector the equipment being used for RD and show/demonstrate its use as practicable. The inspector should:
1. Examine the equipment for proper operation.
 2. Help the representative improve their measurement technique (when necessary). This is especially important when the RD method requires "sticking" the tank to measure the product height.
 3. If an ATG is used and monthly monitoring records are only available in the console unit and the owner/operator is unable to produce the records, assist the tank owner in producing history reports, and provide guidance on how to produce and review future RD records monthly. If the inspector generated and printed the ATG records, the facility should be marked noncompliant for RD and the test results explained in the FOI report comment section.

- I. The inspector should open all dispensers and tank system sumps and do the following:
 1. Compare the information gathered during the initial file review with what can be visually verified during the inspection, including, but not limited to; pump(s), check valve(s), piping material, condition and design, ball float valve extraction fitting(s), and cathodic protection installation (where applicable). Correct your notes when necessary.
 2. Check for signs of contamination. Report suspected or confirmed contamination to the applicable regional office within 48 hours.
 3. Verify that all metallic components, in contact with the ground or electrolytes are protected from corrosion. Check notes from the records inspection to ensure each protected component has been evaluated at the proper intervals.
 4. Check areas/equipment that are used for RD for proper installation and maintenance. The selected RD methodologies must meet regulatory requirements and function properly as installed. Refer to notes from the records inspection and II.C.1-5 above as necessary. Examples of common problems include:
 - a. Interstitial sensors submerged under water.
 - b. Piping test boots installed, blocking released product from reaching the sensor.
 - c. Secondary containment that is improperly installed such that product will not reach a sensor.
 - d. Improperly installed or disconnected sensors.
 5. Shallow dispenser pans, sometimes called “Bravo boxes,” usually do not allow an inspector to readily determine the CP status of the piping at the dispenser end. Check documentation and dispenser containment carefully when shallow dispenser pans are present.
 6. Deteriorating plastic piping – Some forms of flexible piping are known to deteriorate over time and may fail in the future (e.g. a pipe that is seen to be moldy during an inspection may completely lose its outer layer over time). When an inspector observes signs of deterioration such as swelling, elongation, cracking or peeling outer layers, the inspector should:
 - a. Inform the owner of the potential for releases.
 - b. As long as the piping is structurally sound and functioning properly, it may be marked compliant.
 - c. Describe the type and extent of damage on the comment page for DEP follow-up. When possible, include or forward pictures to the DEP Central Office.

- d. If the piping is losing structural integrity, consider it a suspected or confirmed release and report the incident appropriately to DEP within 48 hours.
 - 7. There are several ways that tanks may be interconnected. The inspector should determine how USTs at the facility are connected together. When multiple pumps are connected into a single pressurized line, the inspector needs to be especially vigilant concerning the line leak detector (LLD) methodology employed.
 - J. Verify the type of overfill device(s) used in each tank system and verify (to the extent practicable) that they will work properly with the delivery method(s) to the tank.
 - K. Measure the product level in each UST and record the levels. A tank registered as temporarily-out-of-service must be empty ($\leq 1'$ of product or product-containing mixtures). As long as a UST is not empty, the owner/operator must perform a valid form of RD on **both** the tank and connected underground piping.
 - L. When inspecting a pressure delivery system with a mechanical or electronic LLD, verify that the height between the LLD and the dispensing point is within the specification of the device manufacturer for maximum allowable product head.
- IV. Filling out the FOI form. The inspector should consult his/her field notes often while filling out the FOI form and do the following:
- A. Fill out the FOI form in accordance with the directions contained on the form and in the form instruction document.
 - B. Notations.
 - 1. Except as noted in #2, use only the codes and notations that are listed on the form. Ensure the codes being used apply to the entry being made.
 - 2. Occasionally, DEP will notify the inspector in writing of a new code that does not appear on the form. When using new, approved codes, write the meaning of the code adjacent to the block where it applies for the benefit of the facility owner.
 - 3. Where multiple tank attribute codes apply, list all that are applicable and explain the combination in the comment section.
 - 4. Use the code for no RD only when there is no form of RD being practiced by the owner/operator. Otherwise, indicate the form of RD that the operator is trying to do (even if not completely successful).
- V. Determining Compliance. The inspector must determine compliance in several areas on the FOI report. The inspector should carefully consider the following when determining compliance:
- A. For the purposes of an FOI, compliance is determined based on conditions, as they existed when the inspector first arrived on site, and on available documents and records.

Exceptions are routine tests that are required every 3 years, which may be performed during or in conjunction with the inspection, when the routine FOI is conducted every 3 years (or less). These include 3-year corrosion tests and 3-year line tightness tests (on American suction piping systems). When tests are conducted approximately 3 years apart and the last one was done at or within 3 years of the inspection with passing results, the facility may be marked compliant.

- B. In general, all boxes on the FOI report that are associated with a compliance category must either be checked for that category to be in compliance or be not applicable (N/A).
- C. Do not confuse the presence of an item with its compliance. For example, a cracked spill bucket is present, however, it is noncompliant because it will not function as spill containment during product deliveries and should be explained in the FOI report comment section.
- D. To be valid each “N/A” entry on the FOI compliance blocks must be properly documented in the comment section of the FOI report and N/A must be appropriate for the particular entry.
- E. Equipment failure does not excuse an owner/operator from performing RD. Equipment needs to be repaired and/or another method of RD implemented expeditiously to ensure a tank system meets the RD requirements.
- F. Equipment used for RD must be operational and in good repair.
- G. For monthly RD methods to be compliant there can be no gaps in the period(s) when RD is required (last 12 operating months or since product was first placed in a new tank).
- H. Consider all of the information gathered and what was observed when determining compliance.
- I. Ensure the overfill method is consistent with the types of pump systems that are connected to the tank and will allow the delivery person to react to an overfill situation, expeditiously. See the definition of “Overfill device” for recognized limitations by type.
- J. Follow the specific guidelines stated in the FOI form Instructions document.

CONCLUDING THE ON-SITE INSPECTION

The inspector should discuss the results of the inspection with the operator and the owner or their representative, including ensuring they understand what is out of compliance and what measures that can be taken to mitigate the problems that were uncovered during the inspection. The inspector should also provide advice to the owner on correcting deficiencies that require other industry experts or specialized technicians. For example:

- To repair a defective tank gauge, the tank owner should contact a technician qualified by the gauge manufacturer.

- To evaluate, and if necessary, design repairs for improperly operating impressed current systems, the tank owner should contact a corrosion expert.

The inspector should record this informal training in the space provided on the FOI report form.

Where the inspector has observed problems relating to local ordinances or other permitting authorities, the inspector should inform the owner/operator of the problems. Including compliance status of findings not covered under the Storage Tank Regulations on the FOI form is not required, but may be noted in the comment section. Inspectors may also notify other regulating or permitting authorities, when related significant or unsafe conditions are observed.

If the FOI report form was completed while on-site, obtain the signature of the owner, operator or owner's representative as appropriate. If the representative refuses to sign the form, mark the form as described in the instructions.

Leave a copy of the FOI report with the facility representative unless arrangements have been made to provide a copy at a later date.

AFTER THE ON-SITE INSPECTION

DEP considers it part of the inspector's responsibility to assist and help facility owners and operators bring their facilities into compliance. Inspectors are encouraged to use the 60-day period following an FOI to work with owners and operators to correct deficiencies noted during the initial inspection visit, when practicable. Improvements made during this period should be documented in the comment section of the FOI report along with the types of assistance that the inspector provided. These entries must be initialed or signed by the certified inspector and the date the action was completed recorded. For tank handling activities (major or minor modifications: see guidance #263-0900-011 "Storage Tank Modification and Maintenance Issues"), submit an Underground Storage Tank Modification Report (2630-FM-BECB0575) describing the activities performed.

When necessary, the owner should promptly address areas of noncompliance that are readily mitigated during the 60-day report holding period. The inspector can assist the owner and may perform required tests or surveys when qualified or conduct tank-handling activities when properly certified. It is suggested that the inspector have an action plan or contract with the tank owner and agree on the terms to complete actions such as:

- Perform required galvanic and impressed current surveys (tests).
- Perform required line (tightness) tests.
- Test LLD equipment.
- Complete manufacturer's required maintenance.
- Investigate and document investigation of recent or suspected releases.
- Submit amended Storage Tanks Registration/Permitting Application forms to DEP.

If the FOI report was not completed on-site, complete the report. Explain it to the facility representative and obtain their signature.

SUBMITTING A COMPLETED FOI REPORT FORM

Prior to submitting a completed FOI Report Form to DEP, the inspector should:

- Review field notes, double check their work for accuracy, and make sure the form is filled out completely and legibly.
- Read the statement that he/she is attesting to before signing the form. Inspectors are cautioned that the FOI Report is an official document and must accurately reflect the inspection findings.
- Submit completed inspection reports to DEP within 60 days of conducting the inspection activities (first day on site for an FOI); FOI Reports should not be held longer than 60 days. On occasions, DEP may require submission of an inspection report sooner or by a specific date on a case-by-case basis. This usually occurs when a third-party FOI is conducted as part of an enforcement follow-up initiative by DEP.
- Mail or otherwise distribute the completed form as described in the FOI form instructions. The inspector is responsible for ensuring that the report is received by the department on time; it is not a good idea to rely on the owner/operator to send the report to us.

The Division of Storage Tanks has specific time frames to act upon inspection results. Effective management of the inspection process and bringing facilities into compliance are major goals of the program (See guidance #263-3120-002 “Storage Tank Program Internal Policy on Inspections and On-Site Visits”). Timely submittal of reports with the most up-to-date information is imperative to meeting these goals.

Repairing or fixing compliance issues prior to a report submission does not change the compliance status on the front page of the report. Exceptions on certain test intervals are noted in this guidance document. Noting changes that have occurred in the comment section will allow DEP to resolve these compliance issues after receipt and review of the report, as appropriate. DEP will also use this information to report significant operational compliance to EPA.

NOTE: When necessary, inspectors may promptly contact DEP directly to resolve questions or obtain guidance on specific issues, before submitting the report.

Appendix 1

Release Detection Methodologies

See Appendix 2 for information regarding third-party certification of RD methods.

Equipment used for RD that is excessively worn, damaged or broken, such as a gauge stick with a missing end button or broken end, may not detect a release and shall not be used to meet the Storage Tank Regulation requirements.

To be effective, RD equipment must be used within the limitations set in the third-party certification document. A common error is attempting to use a methodology that is not certified for use on the size tank or piping run that it is being applied to.

TANK RELEASE DETECTION

Methodology	Limitations
Manual tank gauging: 36-hour, no TTT	550 gallons maximum tank capacity.
Manual tank gauging: 44 or 58 hours, no TTT	551-1000 gallons tank capacity. (Test time is determined by tank diameter.)
Manual tank gauging: 36-hour with TTT every 5 years	1001-2000 gallons tank capacity. Usable for only ten years after installation or initial upgrade of bare steel tank, but no later than 11/10/2017.
Certified automatic tank gauging	Per third party certification.
Vapor monitoring	Requires a site evaluation by a PA registered professional, demonstrating its usability, prior to beginning its use.
Groundwater monitoring	Requires a site evaluation by a PA registered professional, demonstrating its usability, prior to beginning its use.
Interstitial monitoring	Equipment manufacturer's performance claims must be documented and available for inspection. Secondary containment must be compatible with and impermeable to the product stored.
Statistical Inventory Reconciliation (SIR)	Due to analysis time frames there are no "second chances." Vendor's instructions must be followed exactly. Valid reports include calculated leak rate, leak threshold, minimum detectable leak rate, Pd, and Pfa.

Tank RD must be performed monthly (at least once every 30 days) while the system is not empty (contains more than one inch of regulated substance) and the test result must be "Pass." "Fail" and "Inconclusive" test results are considered suspected releases and must be investigated by the owner as soon as practicable, but no later than 7 days after the indication of a release. The owner should take steps to eliminate the causes of false failures or inconclusive results.

Tank RD methodologies must detect releases from all portions of the tank that routinely contain product – up to and including the high level limit (based on the type of overfill prevention installed).

Tank tightness testing (TTT) is not a stand-alone method. It forms part of a “combination of methods” when performed with manual tank gauging (larger tanks using 36 hour test time). TTT must be performed by a DEP-certified tank installer, certified in the underground storage tank-tightness tester (UTT) category (as of September 28, 1996).

Manifolded tanks. To date there has not been a TTT that is specifically certified for use on manifolded tanks. Most test vendors have an established procedure to separate the tanks and test them individually. The test manufacturer’s procedure must be followed when performing tightness tests for RD.

PIPE RELEASE DETECTION

When multiple dispensing (pump) systems are connected to a tank system, each must have appropriate pipe RD.

Pressure (including gravity) delivery systems require both a small RD method and a large or LLD method. Non-exempt suction delivery systems only require a small RD method.

Type of Delivery System	Pipe RD requirements
Exempt suction system	Proper construction (§245.442(2)(ii))
American (nonexempt) suction system	Line (tightness) test every 3 years or Monthly monitoring
Pressure (including gravity) systems	A large RD method (one from table A, below) AND A small RD method (one from table B, below)

A. LLD Methodology	Limitations
Mechanical LLD	Per third-party certification.
Electronic LLD (eLLD)	Per third-party certification.
Continuous interstitial monitoring	Must be documented to meet the requirements of an LLD. Continuous operation must be documented.

All LLD methodologies require an annual test of operability. Some eLLDs perform this test internally on a periodic basis; check the manufacturer’s technical documentation to be sure. The LLD must meet the limits set by the manufacturer. If the manufacturer has not set a limit, the LLD must actuate at or before 3.5 gph at 10 psig (or equivalent).

Pressure delivery systems installed or replaced after 11/10/2007 or systems that had 100% of the piping replaced after 11/10/2007 involving a major modification, must have pump shut-off capability associated with one of the three acceptable types of LLD. This requirement is on an individual tank system basis.

B. Small Methodology	Limitations
Applicable tank methodologies (monthly monitoring)	(see above)
Line [tightness] testing <ul style="list-style-type: none"> • Pressure – annually • Suction – 3 years 	Must be performed at a positive pressure equivalent to 1.5 times the pipe operating pressure. Note: There has been no TTT that has been certified to test piping, as of the date of this guidance publication.

When properly certified, an eLLD may be used for an annual line test. Refer to the National Workgroup on Leak Detection Evaluation (NWGLDE) listing and/or EPA certification documents to determine if the eLLD meets this requirement. When reviewing the EPA third-party certification and it says “*Line Tightness Test*” at the top and the appropriate box on page 1 has been checked, this indicates the eLLD meets EPA standards, and the detector has been properly certified to perform line testing.

Line testing not performed by an acceptable eLLD must be performed by a department-certified installer (UTT) after 11/10/2008. The owner should be provided, and have available for the inspector, test data and associated documentation for each required test.

Appendix 2

Certification of Release Detection Methods

Third-party certification of performance –RD methods listed in the table below must be certified as to their ability to detect releases. These test methods must be able to detect the release size specified with a Pd of at least 95% and a Pfa of no more than 5%. Certification documents are **not** optional. For purposes of the FOI, the National Workgroup on Leak Detection Evaluation (NWGLDE: website <http://www.nwglde.org>) *List of Leak Detection Evaluations for Underground Storage Tank Systems* evaluation sheets can be substituted for an EPA report. (When necessary, the regional office may request the owner supply the actual EPA report for their equipment.) The certification of performance is an RD record and must be kept in accordance with RD recordkeeping requirements.

Release Detection Method	Release Certification Criteria
ATG – monthly leak test	0.2 gph
ATG – tank tightness test	0.1 gph
Tank tightness test	0.1 gph
SIR – monthly (tank and/or piping) test	0.2 gph
SIR – tank tightness test	0.1 gph
SIR – line [tightness] test	0.08 gph
Mechanical LLD	3 gph within 1 hour at 10 psig (or equivalent)
Electronic LLD (large RD) function	3 gph within 1 hour at 10 psig (or equivalent)
Electronic LLD – monthly monitoring (small RD)	0.2 gph
Line [tightness] test	0.1 gph at 1.5 times operating pressure (or equivalent)
Other monthly methods	0.2 gph

When certification is not required for a specific type of RD equipment, the manufacturer's performance claims must be documented in writing; these documents take the place of the certification protocols.

Uncertified ATGs may not be used for RD on or after 11/10/2008.

Uncertified LLD may not be used after 9/22/1991.

Note: Manual tank gauging has been certified to the limits specified in the Storage Tank Regulations by the American Petroleum Institute (API).

ATGs and low product levels – An ATG may do a valid leak test at less than the standard 50% level provided the ATG has been certified to a lower level. Consult the EPA certification documents or the latest list from the NWGLDE to determine if a specific ATG was certified for use at low product levels.

Veeder-Root TLS 250 ATG – The TLS 250 is **not** certified to test at low product levels. Additionally, it does not check product level prior to running a leak test. The only way to ensure a valid test on the

TLS 250 is to check the product level prior to the leak test. In order to meet the DEP's recordkeeping requirements and to have a complete record for the inspector, the owner/operator must have an inventory printout from just prior to or after the leak test as well as the leak test printout. The inventory printout needs to indicate that the product level is above the minimum level set in the TLS 250 third party certification (depends on model of tank probe used for level measurement). If the product level is below the required minimum at the time of the leak test or the owner cannot provide the inspector with inventory records for the times the leak tests were conducted, the facility should be marked noncompliant for tank RD and the situation explained in the comment section of the FOI report.

Interstitial LLD – DEP considers a properly installed (in accordance with manufacturer's requirements and national standards), continuously operated and well-maintained interstitial monitoring system to meet RD requirements without additional third party certification provided that:

- All piping slopes uniformly to a monitored containment sump,
- The interstitial probes are located in the bottom of the monitored sump,
- The interstitial probes are installed in the proper (vertical) orientation,
- The secondary containment is continuous (flex connector boots are sealed to the secondary containment, not primary piping),
- The piping sumps are liquid tight, and
- The monitored sumps are clean and dry.

The owner/operator must demonstrate that the system is able to detect a 3.0 gph release at 10 psig within 1 hour. As with all LLDs, the interstitial monitor type must be tested annually to ensure proper operation of the system.

Note: The inspector does not have to verify the slope of piping for systems that are using interstitial monitoring. When appropriate, DEP regional staff may require documentation from the owner/operator to demonstrate the proper installation and slope of the piping.

Note: Since the fall of 2000, PEI RP-100 has required a mechanical or electronic LLD be installed in all pressure systems. If the interstitial method meets the above requirements, this additional form of line leak detection does not require annual testing.

Line tightness test – There is **no** tank test that is certified to test lines. Owners that used a tank test, e.g. Vacutech®, for line testing would be noncompliant for pipe RD.