



**A STANDARD OPERATING PROCEDURE
for**

**Underground Storage Tank (UST)
Routine Operation and Maintenance
Program**

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INTRODUCTION

The U.S. Environmental Protection Agency (EPA) issued regulations, that took effect in 1988, requiring regulated underground storage tanks (USTs) to be upgraded or closed. Leaking UST sites can be very costly to clean up. As of April 1995, over 287,000 confirmed UST leaks had been reported to EPA throughout the United States.

However, once USTs are upgraded or new USTs are installed, a program of continuing preventive maintenance must be instituted to ensure these facilities do not develop leaks contaminating the environment. New and upgraded USTs are made of a complex collection of mechanical and electronic devices that can fail under certain conditions. These failures can be prevented or quickly detected by following routine O&M procedures. Having a new or upgraded UST is a good start, but the system must be properly operated and continuously maintained to ensure that leaks are avoided or quickly detected.

This SOP is prepared to ensure our USTs continue to meet environmental requirements and reduce the likelihood of experiencing an environmental liability due to our UST operations.

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General Services Administration
Heartland Region

Underground Storage Tank (UST) Routine Operation and Maintenance Program

1. **PURPOSE**. The U.S. Environmental Protection Agency (EPA) issued regulations, that took effect in 1988, requiring regulated underground storage tanks (USTs) to be upgraded or closed. GSA Heartland Region has complied with these requirements by removing most of our USTs. At this time, only several USTs are installed in this region; these were installed meeting EPA regulations.

Modern USTs are often thought of as being fully compliant with environmental regulations and not requiring additional oversight. However, this is not the case. In-service USTs must be checked periodically to ensure the protections implemented at installation are still intact and operating as designed. This Standard Operating Procedure (SOP) is presented to outline the necessary elements of an Underground Storage Tank (UST) Routine Operation and Maintenance (O&M) Program.

2. **SCOPE**. This SOP applies to all underground storage tanks owned or operated by GSA within the Heartland Region.

3. **DEFINITIONS**.

a. **Cathodic Protection**. This is a system of corrosion protection where either sacrificial anodes or an impressed current is used. This reverses the electric current that causes corrosion, thus protecting the tank.

b. **Underground Storage Tank**. An UST is any tank, including the underground piping connected to the tank, that has at least 10 percent of its volume underground. This SOP applies only to USTs storing either petroleum or certain hazardous chemicals. However, the following tanks are **not covered** by this SOP:

- (1) Tanks located on or above the floor of underground areas (i.e., basements or tunnels),
- (2) Septic tanks,
- (3) Systems for collecting storm water and wastewater,
- (4) Flow-through process tanks,
- (5) Emergency spill and overflow tanks, and
- (6) Tanks holding 110 gallons or less.

4. **GENERAL REQUIREMENTS**. UST systems owned or operated by GSA are required to have the following safeguards:

a. **Leak Detection**. Leak detection systems are required for both the UST itself and any underground piping. Leak detection must be accomplished at least on a monthly basis and may include:

NOTE: Leak detection for piping presents a more involved problem than for tanks. The following issues must be considered:

* Automatic tank gauging cannot be used to comply with leak detection requirements for piping.

* For suction piping, no leak detection is required **IF** below-grade piping slopes so contents drain back into the tank **and** only 1 check valve is used and it is located directly below the suction pump.

* For pressurized piping, multiple leak detection capabilities are required; request assistance.

For these issues, contact the Regional Safety and Environmental Management Team (6PMF) for guidance regarding leak detection for the system's piping.

(1) **Secondary Containment and Interstitial Monitoring.**

Secondary containment consists of using a barrier, an outer wall, a vault, or a liner around the UST and/or piping. Leaked product from the inner tank or piping is directed towards an "interstitial" monitor located between the inner tank/piping and the outer barrier. Interstitial monitoring methods range from a simple dipstick to a continuous, automated vapor or liquid sensor permanently installed in the system.

(2) Vapor Monitoring. These devices measure product vapors in the soil around the UST to check for a leak. This method requires installation of carefully placed monitoring wells.

(3) Groundwater Monitoring. This method senses the presence of liquid product floating on the groundwater. This method requires installation of monitoring wells at strategic locations in the ground near the tank and along the piping runs. This method cannot be used at sites where groundwater is more than 20 feet below the surface.

(4) Automatic Tank Gauging. A probe permanently installed in the tank is wired to a monitor to provide information on product level and temperature. These systems can

automatically calculate the changes in product volume that can indicate a leaking tank.

b. Corrosion Protection. Corrosion protection is required for both the UST and any underground piping. Corrosion protection can be accomplished by:

(1) Steel tank and piping has corrosion-resistant coating **and** is cathodically-protected, or

(2) Tank and piping is made of (or enclosed in) a non-corrodible material (e.g., fiberglass-reinforced plastic or FRP) (this option includes double-wall tanks and piping), or

(3) Steel tanks, but not piping, can be protected using a method in which a thick layer of non-corrodible material is bonded to the tank.

c. Spill Prevention. The purpose of spill protection equipment is to eliminate the potential for a release during fuel deliveries. All USTs must be equipped with a catchment basin to contain spills. Catchment basins (also called "spill containment manholes" or "spill buckets") are buckets sealed around the fill pipe of the UST. The spill bucket is designed to temporarily contain product spills that might occur during fuel delivery. To contain a spill, the spill bucket must be liquid tight. **The spill bucket is not designed to contain fuel for long periods of time and must be quickly emptied and contents disposed of properly.** Spill buckets need to be large enough to contain any fuel that may spill when the delivery hose is uncoupled from the fill pipe (typically, they range in size from 5 gallons to 25 gallons).

d. Overfill Prevention. As with spill prevention, the purpose of overfill protection equipment is to eliminate the potential for a release during fuel deliveries. Overfill prevention can take the form of any of the following devices:

(1) Automatic Shut-off Device. An automatic shut-off device has one or two valves that are operated by a float mechanism. The device can slow down and then stop the delivery when the product has reached a certain level in the tank.

(2) Overfill Alarm. Overfill alarms use probes installed in the tank to activate an alarm when the tank is either 90% full or within 1 minute of being overfilled. This type of device works only if the driver remains at the truck during the entire delivery.

5. **PREVENTIVE MAINTENANCE**. The devices listed above, as with any system, requires periodic maintenance to ensure its continued proper operation. A number of problems can befall these systems, including containment basins being clogged with leaves or other debris, sensors failing or sliding out of calibration, etc. Accordingly, each Property Management Center (PMC) owning or operating USTs must annually have their systems checked. For example, visible components of pumps, piping, meters, fittings, and dispensing equipment need to be inspected for leakage; probes, alarms, leak detectors, gauges, and any other monitoring equipment need to be checked for proper operation and cleaned as required; all sumps, manways, and other access ways need to be checked for water infiltration. A checklist for routine O&M assessments is presented in [Appendix A](#).

6. **SUSPECTED OR CONFIRMED LEAKS**. Various warning signs indicate that an UST may be leaking and creating problems for the environment and for GSA. Most of these problems can be avoided by paying careful attention to warning signals and taking appropriate action.

a. **Warnings from Equipment.**

(1) Unusual operating conditions (such as erratic behavior of the dispensing pump).

(2) Results from leak detection monitoring and testing that indicate a leak.

b. **Warnings from the Environment.** A leak should be suspected if evidence of leaked petroleum appears at or near your site.

c. **Response to Suspected or Confirmed Leaks.** You need to be fully prepared to respond to releases BEFORE they may occur. You need to know what to do when release detection methods indicate a suspected or confirmed release. Be ready to take the following steps, as appropriate:

(1) **Stop The Release.** Take immediate action to prevent the release of more product:

(a) Turn off the power to the dispenser and "bag" the nozzle.

(b) Make sure you know where your emergency shutoff switch is located.

(c) Empty the tank, if necessary, without further contaminating the site. You may need the assistance of your supplier or distributor.

(2) **Contain The Spill Or Overfill.** Contain, absorb, and clean up any surface spills or overfills. Maintain enough absorbent material at your facility to contain a spill or overfill of petroleum products until emergency response personnel can respond to the incident. The suggested supplies include, but are not limited to, the following:

(a) Containment devices, such as containment booms, dikes, and pillows.

(b) Absorbent material, such as kitty litter, chopped corn cob, sand, and sawdust. (Be sure to properly dispose of used absorbent materials.)

(c) Mats or other material capable of keeping spill or overfill out of nearby storm drains.

(d) Spark-free flash light.

(e) Spark-free shovel.

(f) Buckets.

(g) Reels of "caution tape," traffic cones, and warning signs.

(h) Personal protective gear.

(3) **Safety.** Personnel must **NOT** be placed into danger when responding to known or suspected releases:

(a) Identify any fire, explosion or vapor hazards and take action to neutralize these hazards.

(b) If the spill or leak is in excess of 25 gallons, professional assistance will be required.

(c) Safety hazards must be considered with large or small leaks or spills, such as confined spaces, fire and explosion, slips and falls, etc.

(4) **Call For Help.** Contact the local fire or emergency response authority. Make sure these crucial telephone numbers are prominently posted where they can be readily and easily found.

(5) **Report To Authorities.** If any of the following conditions are observed, contact your State's underground storage tank regulatory authority (**and** the Regional Safety and Environmental Management Team - 6PMF) to report a suspected or confirmed release as soon as possible (within 24 hours):

(a) Any spill or overflow of petroleum that exceeds 25 gallons or that causes a sheen on nearby surface water.

NOTE: Spills and overfills under 25 gallons that are contained and immediately cleaned up do not have to be reported. If they can't be quickly cleaned up they must be reported to your State's regulatory agency.

(b) Any released regulated substances at the UST site or in the surrounding area – such as the presence of liquid petroleum; soil contamination; surface water or groundwater contamination; or petroleum vapors in sewer, basement, or utility lines.

(c) Any unusual operating conditions you observe – such as erratic behavior of the dispenser, a sudden loss of product, or an unexplained presence of water in the tank. However, reporting is not required if the system's equipment is found to be defective, but not leaking, and is immediately repaired or replaced.

(d) Results from the release detection system indicates a suspected release. However, reporting is not if the monitoring device is found to be defective and is immediately repaired, recalibrated, or replaced and further monitoring does not confirm the initial suspected release.

7. **RECORDKEEPING**. PMCs must maintain records, for all tank systems, immediately available at the site or readily available alternative location for five years. These records must include results of the O&M assessments listed in [Appendix A](#) as well as any suspected or confirmed leaks and the response(s) thereto.

APPENDIX A

UNDERGROUND STORAGE TANK (UST) SPILL AND OVERFILL O&M CHECKLIST

UST PREVENTIVE MAINTENANCE CHECKLIST

ITEM TO BE CHECKED	WHO CHECKS?	WHEN CHECKED?	PARAMETERS
Leak Detection	PMC Personnel	Monthly	<p>Use release detection system to test for leakage. Testing more often than monthly can catch leaks sooner and reduce cleanup costs and problems.</p> <p>Test release detection system according to the manufacturer's instructions to make sure it is working properly. Don't assume that your release detection system is working and never needs checking. Read your owner's manual, run the appropriate tests, and see if your system is set up and working properly. Some interstitial monitoring systems have a "test" or "self-diagnosis" mode that can easily and routinely run these checks.</p>
	UST Contractor	Annually	<p>Check the leak detection system. Have a qualified UST contractor make sure the electronic leak detection system is calibrated & operating as designed.</p>
Cathodic Protection	PMC Personnel	Every 60 Days	<p>Impressed Current System Only. Check to ensure system is turned on and rectifier is operating properly.</p>
	UST Contractor	Every 3 Years	<p>All Systems (Impressed Current and Sacrificial Anodes). Check to ensure system is operating properly and that anodes (if used) are not depleted.</p>
Spill Bucket	PMC Personnel	Monthly	<p>Keep spill bucket clean and empty of liquids. Some spill buckets are equipped with a drainage valve which allows you to drain accumulated fuel into the UST. Others can be equipped with a manual pump so fuel can be put into the UST by pumping it through the fill pipe. However, keep in mind that when you pump out or drain the spill bucket into the UST, any water and/or debris may also enter the UST. If a spill bucket is not equipped with a drain valve or pump, then any accumulated fuel or water must be removed manually and disposed of properly.</p>
	PMC Personnel	Monthly	<p>Periodically check spill bucket and remove any debris. Debris includes soil, stones, or trash.</p>
	UST Contractor	Annually	<p>Periodically check to see if the spill bucket is still liquid tight. Have a qualified UST contractor inspect the spill bucket for signs of wear, cracks, or holes. Based on this inspection, the contractor may suggest a test to determine if the spill bucket is tight or needs repair or replacement.</p>

Over-Fill Alarms	PMC Personnel	Monthly	Signage. Ensure signs are posted which can be readily seen by the fuel delivery person and which alert him/her to the overfill warning devices & alarms in use.
	UST Contractor	Annually	Periodically check the over-fill device. Have a qualified UST contractor make sure the electronic over-fill device is functioning properly and that the alarm activates when the fuel reaches 90% of the tank capacity or is within one minute of being over-filled: <ul style="list-style-type: none"> * Ensure the alarm can be heard and/or seen from where the tank is fueled. * Make sure the electronic device and probe are operating properly.
Ball Float Valves	PMC Personnel	Monthly	Signage. Ensure signs are posted which can be readily seen by the fuel delivery person and which alert him/her to the overfill warning devices & alarms in use.
	UST Contractor	Annually	Periodically check the ball float valve. Have a qualified UST contractor make sure the ball float valve is functioning properly and that it will restrict fuel flowing into the UST at 90% of the tank capacity or within 30 minutes prior to over-filling: <ul style="list-style-type: none"> * Ensure the air hole is not plugged. * Make sure the ball cage is still intact. * Ensure the ball still moves freely in the cage. * Make sure the ball still seals tightly on the pipe.
Automatic Shut-Off Devices	PMC Personnel	Monthly	Signage. Ensure signs are posted which can be readily seen by the fuel delivery person and which alert him/her to the overfill warning devices & alarms in use.
	UST Contractor	Annually	Periodically check the automatic shut-off device. Have a qualified UST contractor make sure the automatic shut-off device is functioning properly and that the device will shut off fuel flowing into the tank at 95% of the tank capacity or before the fittings at the top of the tank are exposed to fuel: <ul style="list-style-type: none"> * Make sure the float operates properly. * Make sure that there are no obstructions in the fill pipe that would keep the floating mechanism from working.