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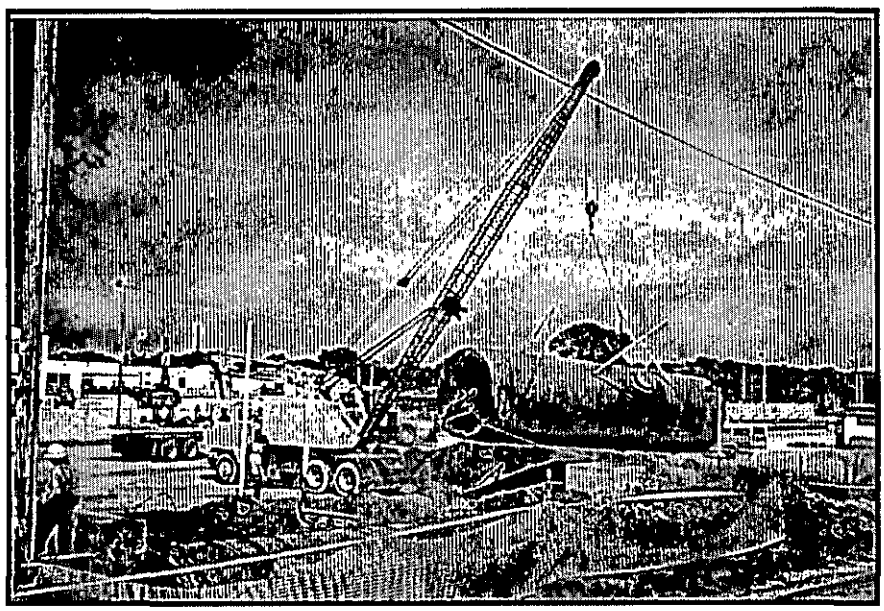
Protocol for Conducting Environmental Compliance Audits of Storage Tanks under the Resource Conservation and Recovery Act



EPA Office of Compliance

Notice

The statements in this document are intended solely as guidance to aid regulated entities in complying with the regulations. The guidance is not a substitute for reading the regulations and understanding all the requirements as it applies to your facility. This guidance does not constitute rulemaking by the U.S. EPA and may not be relied on to create a substantive or procedural right or benefit enforceable, at law or in equity, by any person. U.S. EPA may decide to update this guide without public notice to reflect changes in U.S. EPA's approach to implementing the regulations or to clarify and update text. To determine whether U.S. EPA has revised this document and/or to obtain copies, contact U.S. EPA's Center for Environmental Publications at 1(800) 490-9198. Additional information regarding U.S. EPA Hotlines and further assistance pertaining to the specific rules discussed in this document can be found at the end of the *Key Compliance Requirements* located in Section **II**. **The contents of this document reflect regulations issued as of March 12, 2000.**

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Section I
Introduction

Background

The Environmental Protection Agency (U.S. EPA) is responsible for ensuring that businesses and organizations comply with federal laws that protect the public health and the environment. U.S. EPA's Office of Enforcement and Compliance Assurance (OECA) has begun combining traditional enforcement activities with more innovative compliance approaches including the provision of compliance assistance to the general public. U.S. EPA's Office of Compliance Assistance was established in 1994 to focus on compliance assistance-related activities. U.S. EPA is also encouraging the development of self-assessment programs at individual facilities. Voluntary audit programs play an important role in helping companies meet their obligation to comply with environmental requirements. Such assessments can be a critical link, not only to improved compliance, but also to improvements in other aspects of an organization's performance. For example, environmental audits may identify pollution prevention opportunities that can substantially reduce an organization's operating costs. Environmental audits can also serve as an important diagnostic tool in evaluating a facility's overall environmental management system or EMS.

U.S. EPA is developing 13 multi-media Environmental Audit Protocols to assist and encourage businesses and organizations to perform environmental audits and disclose violations in accordance with OECA's Audit and Small Business Policies. The audit protocols are also intended to promote consistency among regulated entities when conducting environmental audits and to ensure that audits are conducted in a thorough and comprehensive manner. The protocols provide detailed regulatory checklists that can be customized to meet specific needs under the following primary environmental management areas:

- Generation of RCRA Hazardous Waste
- Treatment Storage and Disposal of RCRA Hazardous Waste
- EPCRA
- CERCLA
- Clean Air Act
- Clean Water Act
- Safe Drinking Water Act
- TSCA
- Universal Waste and Used Oil
- Managing Nonhazardous Solid Waste
- Pesticides Management (FIFRA)
- Management of Toxic Substances (e.g., PCBs, lead-based paint, and asbestos)
- RCRA Regulated Storage Tanks

Who Should Use These Protocols?

U.S. EPA has developed these audit protocols to provide regulated entities with specific guidance in periodically evaluating their compliance with federal environmental requirements. The specific application of this particular protocol, in terms of which media or functional area it applies to, is described in Section II under "Applicability".

The Audit Protocols are designed for use by individuals who are already familiar with the federal regulations but require an updated comprehensive regulatory checklist to conduct environmental ***compliance*** audits at regulated facilities. Typically, compliance audits are performed by persons who are not necessarily media or legal experts but instead possess a working knowledge of the regulations and a familiarity with the operations and practices of the facility to be audited. These two basic skills are a prerequisite for adequately identifying areas at the facility subject to environmental regulations and potential regulatory violations that subtract from the organizations environmental performance. With these basic skills, audits can be successfully conducted by persons with various educational backgrounds (e.g., engineers, scientists, lawyers, business owners or operators). These protocols are not intended to be a substitute for the regulations nor are they intended to be instructional to an audience seeking a primer on the requirements under Title 40, however, they are designed to be sufficiently detailed to support the auditor's efforts.

The term "Protocol" has evolved over the years as a term of art among the professional practices of auditing and refers to the actual working document used by auditors to evaluate facility conditions against a given set of criteria (in this case the federal regulations). Therefore these documents describe "what" to audit a facility for rather than "how" to conduct an audit. To optimize the effective use of these documents, you should become familiar with basic environmental auditing practices. For more guidance on how to conduct environmental audits, U.S. EPA refers interested parties to two well known organizations: The Environmental Auditing Roundtable (EAR) and the Institute for Environmental Auditing (IEA).

Environmental Health and Safety Auditing Roundtable
35888 Mildred Avenue
North Ridgeville, Ohio 44039
(216) 327-6605

The Institute for Environmental Auditing
Box 23686
L'Enfant Plaza Station
Washington, DC 20026-3686

U.S. EPA's Public Policies that Support Environmental Auditing

In 1986, in an effort to encourage the use of environmental auditing, U.S. EPA published its "Environmental Auditing Policy Statement" (see 51 FR 25004). The 1986 audit policy states that "it is U.S. EPA policy to encourage the use of environmental auditing by regulated industries to help achieve and maintain compliance with environmental laws and regulation, as well as to help identify and correct unregulated environmental hazards." In addition, U.S. EPA defined environmental auditing as "a systematic, documented, periodic, and objective review of facility operations and practices related to meeting environmental requirements." The policy also identified several objectives for environmental audits:

- **verifying compliance with environmental requirements,**
- **evaluating the effectiveness of in-place environmental management systems, and**
- **assessing risks from regulated and unregulated materials and practices.**

In 1995, U.S. EPA published "Incentives for Self-Policing: Discovery, Disclosure, Correction and Prevention of Violations" which both reaffirmed and expanded its 1986 audit policy. The 1995 audit policy offers major incentives for entities to discover, disclose and correct environmental violations. Under the 1995 policy, U.S. EPA will not seek gravity-based penalties or recommend criminal charges be brought for violations that are discovered through an "environmental audit" (as defined in the 1986 audit policy) or a management system reflecting "due diligence" and that are promptly disclosed and corrected, provided that other important safeguards are met. These safeguards protect health and the environment by precluding policy relief for violations that cause serious environmental harm or may have presented an imminent and substantial endangerment.

In 1996, U.S. EPA issued its "Final Policy on Compliance Incentives for Small Businesses". The policy is intended to promote environmental compliance among small businesses by providing them with special incentives to participate in U.S. EPA compliance assistance programs. Similar to the U.S. EPA Audit Policies, the Small Business Policy also encourages small businesses to conduct environmental audits, and then to promptly disclose and correct violations.

More information on U.S. EPA's Small Business and Audit/Self-Disclosure Policies are available by contacting U.S. EPA's Enforcement and Compliance Docket and Information Center at (202) 564-2614 or visiting the U.S. EPA web site at: http://es.EPA.gov/oeca/polguid/polguid 1.html

How to Use The Protocols

Each protocol provides guidance on key requirements, defines regulatory terms, and gives an overview of the federal laws affecting a particular environmental management area. They also include a checklist containing detailed procedures for conducting a review of facility conditions. The audit protocols are designed to support a wide range of environmental auditing needs; therefore several of the protocols in this set or sections of an individual protocol may not be applicable to a particular facility. To provide greater flexibility, each audit protocol can be obtained electronically from the U.S. EPA Website (www.EPA.gov/oeca/ccsmd/profile.html). The U.S. EPA Website offers the protocols in a word processing format which allows the user to custom-tailor the checklists to more specific environmental aspects associated with the facility to be audited.

The protocols are not intended to be an exhaustive set of procedures; rather they are meant to inform the auditor, about the degree and quality of evaluation essential to a thorough environmental audit. U.S. EPA is aware that other audit approaches may also provide an effective means of identifying and assessing facility environmental status and in developing corrective actions.

It is important to understand that there can be significant overlap within the realm of the federal regulations. For example, the Department of Transportation (DOT) has established regulations governing the transportation of hazardous materials. Similarly, the Occupational Safety and Health Administration (OSHA) under the U.S. Department of Labor has promulgated regulations governing the protection of workers who are exposed to hazardous chemicals. There can also be significant overlap between federal and state environmental regulations. In fact, state programs that implement federally mandated programs may contain more stringent requirements that are not included in these protocols. There can also be multiple state agencies regulating the areas covered in these protocols. The auditor also should determine which regulatory agency has authority for implementing an environmental program so that the proper set of regulations is consulted. Prior to conducting the audit, the auditor should review federal, state and local environmental requirements and expand the protocol, as required, to include other applicable requirements not included in these documents.

Review of Federal Legislation and Key Compliance Requirements:

These sections are intended to provide only supplementary information or a "thumbnail sketch" of the regulations and statutes. These sections are not intended to function as the main tool of the protocol (this is the purpose of the checklist). Instead, they serve to remind the auditor of the general thrust of the regulation and to scope out facility requirements covered by that particular regulation. For example, a brief paragraph describing record keeping and reporting requirements and the associated subpart citations will identify and remind the auditor of a specific area of focus at the facility. This allows the auditor to plan the audit properly and to identify key areas and documents requiring review and analysis.

State and Local Regulations:

Each U.S. EPA Audit Protocol contains a section alerting the auditor to typical issues addressed in state and local regulations concerning a given topic area (e.g., RCRA and used oil). From a practical standpoint, U.S. EPA cannot present individual state and local requirements in the protocols. However, this section does provide general guidance to the auditor regarding the division of statutory authority between U.S. EPA and the states over a specific media. This section also describes circumstances where states and local governments may enact more stringent requirements that go beyond the federal requirements.

U.S. EPA cannot overemphasize how important it is for the auditor to take under consideration the impact of state and local regulations on facility compliance. U.S. EPA has delegated various levels of authority to a majority of the states for most of the federal regulatory programs including enforcement. For example, most facilities regulated under RCRA, and/or CWA have been issued permits written by the states to ensure compliance with federal and state regulations. In turn, many states may have delegated various levels of authority to local jurisdictions. Similarly, local governments (e.g., counties, townships) may issue permits for air emissions from the facility. Therefore, auditors are advised to review local and state regulations in addition to the federal regulations in order to perform a comprehensive audit.

Key Terms and Definitions:

This section of the protocol identifies terms of art used in the regulations and the checklists that are listed in the "Definitions" sections of the Code of Federal Regulations (CFR). It is important to note that not all definitions from the CFR may be contained in this section, however; those definitions which are commonly repeated in the checklists or are otherwise critical to an audit process are included. Wherever possible, we have attempted to list these definitions as they are written in the CFR and not to interpret their meaning outside of the regulations.

The Checklists:

The checklists delineate what should be evaluated during an audit. The left column states either a requirement mandated by regulation or a good management practice that exceeds the requirements of the federal regulations. The right column gives instructions to help conduct the evaluation. These instructions are performance objectives that should be accomplished by the auditor. Some of the performance objectives may be simple documentation checks that take only a few minutes; others may require a time-intensive physical inspection of a facility. The checklists contained in these protocols are (and must be) sufficiently detailed to identify any area of the company or organization that would potentially receive a notice of violation if compliance is not achieved. For this reason, the checklists often get to a level of detail such that a specific paragraph of the subpart (e.g., 40 CFR 262.34(a)(1)(i)) contained in the CFR is identified for verification by the auditor. The checklists contain the following components:

- **"Regulatory Requirement or Management Practice Column"**
  The "Regulatory Requirement or Management Practice Column" states either a requirement mandated by regulation or a good management practice that exceeds the requirements of the Federal regulations. The regulatory citation is given in parentheses after the stated requirement. Good management practices are distinguished from regulatory requirements in the checklist by the acronym (MP) and are printed in italics.

- **"Reviewer Checks" Column:**
  The items under the "Reviewer Checks:" column identify requirements that must be verified to accomplish the auditor's performance objectives. *(The key to successful compliance auditing is to verify and document site observations and other data.)* The checklists follow very closely with the text in the CFR in order to provide the service they are intended to fulfill (i.e., *to be used for compliance auditing).* However, they are not a direct recitation of the CFR. Instead they are organized into more of a functional arrangement (e.g., recordkeeping and reporting requirements vs. technical controls) to accommodate an auditor's likely sequence of review during the site visit. Wherever possible, the statements or items under the "Reviewer

Checks" column, will follow the same sequence or order of the citations listed at the end of the statement in the "Regulatory Requirement" column.

- **"NOTE:" Statements**
  "Note:" statements contained in the checklists serve several purposes. They usually are distinguished from "Verify" statements to alert the auditor to *exceptions or conditions* that may affect requirements or to referenced standards that are not part of Title 40 (e.g., American Society for Testing and Materials (ASTM) standards). They also may be used to identify options that the regulatory agency may choose in interacting with the facility (e.g., permit reviews) or options the facility may employ to comply with a given requirement.

- **Checklist Numbering System**:
  The checklists also have a unique numbering system that allows the protocols to be more easily updated by topic area (e.g., RCRA Small Quantity Generator). Each topic area in turn is divided into control breaks to allow the protocol to be divided and assigned to different teams during the audit. This is why blank pages may appear in the middle of the checklists. Because of these control breaks, there is intentional repetition of text (particularly "Note" Statements) under the "Reviewer Checks" column to prevent oversight of key items by the audit team members who may be using only a portion of the checklist for their assigned area.

Updates:

Environmental regulations are continually changing both at the federal and state level. For this reason, it is important for environmental auditors to determine if any new regulations have been issued since the publication of each protocol document and, if so, amend the checklists to reflect the new regulations. Auditors may become aware of new federal regulations through periodic review of Federal Register notices as well as public information bulletins from trade associations and other compliance assistance providers. In addition, U.S. EPA offers information on new regulations, policies and compliance incentives through several Agency Websites. Each protocol provides specific information regarding U.S. EPA program office websites and hotlines that can be accessed for regulatory and policy updates.

U.S. EPA will periodically update these audit protocols to ensure their accuracy and quality. Future updates of the protocols will reflect not only the changes in federal regulations but also public opinion regarding the usefulness of these documents. Accordingly, the Agency would like to obtain feedback from the public regarding the format, style and general approach used for the audit protocols. The last appendix in each protocol document contains a user satisfaction survey and comment form. This form is to be used by U.S. EPA to measure the success of this tool and future needs for regulatory checklists and auditing materials.

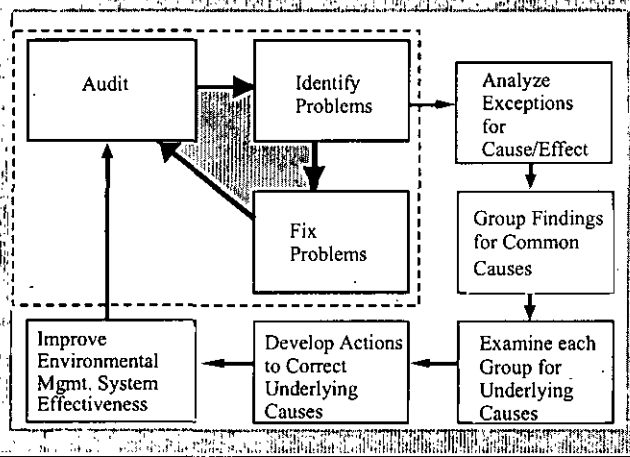
The Relationship of Auditing to Environmental Management Systems

An environmental auditing program is an integral part of any organization's environmental management system (EMS). Audit findings generated from the use of these protocols can be used as a basis to implement, upgrade, or benchmark environmental management systems. Regular environmental auditing can be the key element to a high quality environmental management program and will function best when an organization identifies the "root causes" of each audit finding. Root causes are the primary factors that lead to noncompliance events. For example a violation of a facility's wastewater discharge permit may be traced back to breakdowns in management oversight, information exchange, or inadequate evaluations by untrained facility personnel.

As shown in Figure 1, a typical approach to auditing involves three basic steps: conducting the audit, identifying problems (audit findings), and fixing identified deficiencies. When the audit process is expanded, to identify and correct root causes to noncompliance, the organization's corrective action part of its EMS becomes more effective. In the expanded model, audit findings (exceptions) undergo a root cause analysis to identify underlying causes to noncompliance events. Management actions are then taken to correct the underlying causes behind the audit findings and improvements are made to the organizations overall EMS before another audit is conducted on the facility. Expanding the audit process allows the organization to successfully correct problems, sustain compliance, and

prevent discovery of the same findings again during subsequent audits. Furthermore, identifying the root cause of an audit finding can mean identifying not only the failures that require correction but also successful practices that promote compliance and prevent violations. In each case a root cause analysis should uncover the failures while promoting the successes so that an organization can make continual progress toward environmental excellence.

Figure 1 - Expanded Corrective Action Model



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Section II
Audit Protocols

Applicability

This audit protocol applies to facilities that store and manage petroleum, hazardous substances, and hazardous waste in underground and/or aboveground storage tanks regulated under the Resource Conservation and Recovery Act (RCRA). U.S. EPA has developed separate audit protocol documents that pertain to generators of hazardous waste and treatment storage and disposal facilities (TSDFs). Information is provided below for obtaining copies of these documents and other compliance assistance materials available from U.S. EPA.

Not all checklist items will be applicable to a particular facility. Guidance is provided on the checklists to direct the auditor to the regulations typically applicable to the type of storage tanks managed on the site. In addition to the regulations contained in this document, auditors should also be aware of two additional tank related requirements under the federal Clean Air Act:

1. **40 CFR 60, Subpart Kb: Standards of Performance for Volatile Organic Liquid Storage Vessels (Including** Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction or Modifications Commenced After July 23, 1984.
2. 40 CFR 63, Subpart OO: National Emission Standards for Tanks-Level 1.

Audit guidance and technical information regarding the federal Clean Air Act is provided in a separate series of documents titled *Protocol for Conducting Environmental Audits under the Clean Air Act (Volumes I and II)* and is expected to be available in the year 2000.

There are numerous environmental regulatory requirements administered by federal, state and local government. Each level of government may have a major impact on areas at the facility that are subject to the audit. Therefore auditors are advised to review federal, state, and local regulations in order to perform a comprehensive audit.

Review of Federal Legislation

The Resource Conservation and Recovery Act, Subtitle C (1976)
The Resource, Conservation and Recovery Act (RCRA) of 1976, which amended the Solid Waste Disposal Act of 1965, addresses hazardous (Subtitle C) and solid (Subtitle D) waste management activities. Subtitle C of RCRA, 42 U.S. Code (USC) sections 6921-6939b, establishes standards and procedures for the handling, storage, treatment, and disposal of hazardous waste. For example, RCRA prohibits the placement of bulk or noncontainerized liquid hazardous waste or free liquids containing hazardous waste into a landfill. It also prohibits the "land disposal" of specified wastes and disposal of hazardous waste through underground injection within 1/4 mile (0.40 km) of an underground source of drinking water. Pursuant to Subtitle C of RCRA, the Environmental Protection Agency (U.S. EPA) promulgated regulations at 40 CFR 260 through 299, establishing a "cradle-to-grave" system that governs hazardous waste from the point of generation to its treatment or disposal.

The 1984 Hazardous and Solid Wastes Amendments (HSWA) greatly expanded the requirements and coverage of RCRA. Perhaps the most significant provision of HSWA is the prohibition on the land disposal of hazardous waste. The land disposal restrictions (LDRs) promulgated by U.S. EPA essentially ban the disposal of untreated liquid hazardous waste or hazardous waste containing free liquids in landfills and establish treatment standards for these wastes. In addition to the new statutory and regulatory requirements imposed by HSWA, a new subtitle to the act was created to govern underground storage tanks (USTs). In response to this act, U.S. EPA has promulgated regulations imposing technical standards for tank performance and management, including closure and site cleanup, and establishing financial responsibility for tank owners and operators.

After assessing air emissions at TSDFs, the U.S. EPA ascertained that volatile organic chemicals (VOCs) adversely affect human health and welfare. In response, U.S. EPA promulgated three subparts of RCRA rules designed to control VOCs. In 1990, U.S. EPA issued Subparts AA and BB, which amended 40 CFR 264 and 265. Subpart AA governs organic chemical emissions from certain hazardous waste treatment processes, while Subpart BB governs equipment that contains or contacts hazardous waste with at least 10% organic chemicals by weight. Subpart CC includes requirements for controlling VOC emissions from tanks, surface impoundments, containers, and certain miscellaneous "Subpart X" units. The Subpart CC Final Rule was signed on December 6, 1994, and the Final Rule Amendments were signed on October 4, 1996.

State/Local Regulations

RCRA encourages states to develop their own parallel regulatory programs for hazardous waste management. This includes enacting statutory authority and operating hazardous waste regulatory programs. Many states have met the requirements established by U.S. EPA in 40 CFR 271 (Requirements for Authorization of state Hazardous Waste Programs) and have been approved to manage their own state programs. Many states have adopted the U.S. EPA regulations by reference or have promulgated regulations that are identical to the U.S. EPA regulations, while other states have promulgated regulations stricter than the federal RCRA. These differences between individual state regulations and the federal program require that auditors check the status of their state's authorization and then determine which regulations apply. For example, many state UST programs also regulate heating oil tanks or other types of tanks not regulated by the federal requirements. Since the section checklists are based exclusively on the requirements of the federal RCRA program, the auditor should determine in what ways the applicable state program differs from the federal program.

Key Compliance Requirements for Underground Storage Tanks (USTs)

UST Definition and Applicability
(40 CFR 280.10 through 40 CFR 280.12)
An UST:

1. is a tank and any underground piping connected to the tank that has at least 10 percent of its combined volume underground, and

2. is used to store petroleum or certain hazardous substances. UST regulations apply to the several hundred hazardous substances identified by Section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA).

The federal UST regulations do not apply to the following:

1. tanks with a capacity of 110 gal or less;
2. farm and residential tanks holding 1,100 gal or less of motor fuel used for noncommercial purposes;
3. tanks storing heating oil used on the premises where it is stored;
4. tanks on or above the floor of underground areas;
5. septic tanks and systems for collecting storm water and wastewater;
6. wastewater treatment tank systems (including oil-water separators) regulated by section 307(b) or 402 of the Clean Water Act;
7. any UST system holding hazardous wastes listed or identified under Subtitle C of the Solid Waste Disposal Act, or a mixture of such hazardous waste and other regulated substances;
8. surface impoundments, pits, ponds, or lagoons;
9. liquid trap or associated gathering lines directly related to oil or gas production and gathering operations;
10. flow-through process tanks;
11. emergency spill and overfill tanks;
12. equipment or machinery that contains regulated substances for operational purposes such as hydraulic lift tanks and electrical equipment tanks;
13. pipelines regulated under the Natural Gas Pipeline Safety Act of 1968 or the Hazardous Liquid Pipeline Safety

Act of 1979 or which is an intrastate pipeline facility regulated under state laws comparable to the provisions of these two Safety Acts; and

14. any UST system that contains a *de minimis* concentration of regulated substances.

The USTs listed below must comply only with interim prohibition requirements to prevent releases from deferred UST systems (see 40 CFR 280.11) and corrective action requirements (see 40 CFR 280.60 through 40 CFR 280.67):

1. wastewater treatment tank systems (including oil-water separators) that are not regulated by section 307(b) or 402 of the Clean Water Act;
2. UST systems containing radioactive material that are regulated under the Atomic Energy Act of 1954;
3. UST systems part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A;
4. airport hydrant fuel distribution systems; and
5. UST systems with field-constructed tanks.

Also, USTs storing fuel solely for use by emergency power generators do not need to meet the leak detection requirements but must comply with all other UST requirements (see 40 CFR 280.40 through 280.45).

Leak Detection Requirements for USTs
(40 CFR 280.41 through 280.43)
Federal UST regulations require that owners and operators of all UST systems provide a method, or combination of methods, of release detection that:

1. **can detect a release from any portion of the UST and the connected piping that routinely contains stored product;**
2. **is installed, calibrated, operated, and maintained in accordance with the manufacturer's instructions; and**
3. **meets the specific performance requirements for each release detection method.**

USTs installed after December 22, 1988 must meet leak detection requirements when they are installed. USTs installed on or before December 22, 1988 had a phased-in schedule for compliance as shown in the table below--note that the last deadline occurred in December 1993.

Schedule for Phase-in of Release Detection
(40 CFR 280.40(c))

Year system was installed	Year when release detection is required (by December 22 of the year indicated)				
	1989	1990	1991	1992	1993
Before 1965 or date unknown	RD	P			
1965-69		P/RD			
1970-74		P	RD		
1975-79		P		RD	
1980-88		P			RD

RD = must begin release detection for tanks and suction piping in accordance to 40 CFR 280.41 (a), 40 CFR 280.41(b) (2) and , 40 CFR 280.42.

USTs must be checked at least once a month to see if they are leaking. Owners and operators of UST systems have several options for performing monthly monitoring of the UST using one (or a combination) of the following monthly monitoring leak detection methods:

1. Secondary Containment With Interstitial Monitoring (see 40 CFR 280.43(g))
   Secondary containment often uses a barrier, an outer wall, a vault, or a liner around the UST or piping. Tanks can be equipped with inner bladders that provide secondary containment. Leaked product from the inner tank or piping is directed towards an "interstitial" monitor located between the inner tank or 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. Automatic Tank Gauging Systems (see 40 CFR 280.43(d))
   A probe permanently installed in the tank is wired to a monitor to provide information on product level and temperature. These systems automatically calculate the changes in product volume that can indicate a leaking tank..

3. Vapor Monitoring (see 40 CFR 280.43(e))
   Vapor monitoring measures product "fumes" in the soil around the UST to check for a leak. This method requires installation of carefully placed monitoring wells. Vapor monitoring can be performed manually on a periodic basis or continuously using permanently installed equipment.

4. Groundwater Monitoring (see 40 CFR 280.43(f))
   Groundwater monitoring 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. To discover if leaked product has reached groundwater, these wells can be checked periodically by hand or continuously with permanently installed equipment. This method cannot be used at sites where groundwater is more than 20 feet below the surface.

5. Other Methods Meeting Performance Standards (see 40 CFR 280.43(h))
   Any technology can be used if it meets a performance standard of detecting a leak of 0.2 gallons per hour with a probability of detection of at least 95 percent and a probability of false alarm of no more than 5 percent. Regulatory authorities can approve another method if the UST owner and operator demonstrate that it works as well as one of the methods above and they comply with any condition the authority imposes.

There are a few additional leak detection choices with the restrictions described below:

1. Tank Tightness Testing With Inventory Control (see 40 CFR 280.43(a) and 280.43(c))
   This method combines periodic tank tightness testing with monthly inventory control. Inventory control involves taking measurements of tank contents and recording amount pumped each operating day, as well as reconciling all this data at least once a month. This combined method must also include tightness tests, which are sophisticated tests performed by trained professionals. *This combined method can be used only temporarily* (usually for 10 years or less).

2. Statistical Inventory Reconciliation
   Statistical Inventory Reconciliation (SIR), when performed according to the vendor's specifications, meets federal leak detection requirements for USTs as follows. SIR with 0.2 gallon per hour leak detection capability meets the federal requirements for monthly monitoring for the life of the tank and piping. SIR with a 0.1 gallon per hour leak detection capability meets the federal requirements as an equivalent to tank tightness testing. SIR can, if it has the capability of detecting even smaller leaks, meet the federal requirements for line tightness testing as well.

3. Manual Tank Gauging (see 40 CFR 280.43(b))
   Manual tank gauging can be used only for tanks of 2,000 gal or less capacity. This method requires keeping the tank undisturbed for at least 36 h each week, during which the contents of the tank are measured twice at the beginning and twice at the end of the test period. At the end of each week the results are compared to a set of standards to determine if the tank may be leaking (see 40 CFR 280.43(b)(4)). Only tanks of 550 gal or less nominal capacity may use this method as the sole method of release detection. Tanks of 551 to 2,000 gal may use this method in place of manual inventory control. Tanks of greater than 2,000 gal nominal capacity may not use this method to meet the requirements of 40 CFR 280.43.

Required "Probabilities" For Leak Detection
(40 CFR 280.40(a)(3))
The regulations require not only that leak detection methods be able to detect certain leak rates, but that they also give the correct answer consistently. In general, methods must detect the specified leak rate with a probability of detection of at least 95 percent and a probability of false alarm of no more than 5 percent. Simply stated, this means that, of 100 tests of USTs leaking at the specified rate, at least 95 of them must be correctly detected. It also means that, of 100 tests of non-leaking USTs, no more than 5 can be incorrectly called leaking.

Additional Leak Detection For Piping
(40 CFR 280.41(b) and 280.44)
Regulatory requirements for pressurized piping include the following:

1. Each pressurized piping run must have one leak detection method from each set below (see 40 CFR 280.41(b)(1)):
   i) An Automatic Line Leak Detector: Automatic flow restrictor ; or
   ii) Automatic flow shutoff; or
   iii) Continuous alarm system.
   b) And One Other Method:
   i) Annual line tightness test; or
   ii) Monthly interstitial monitoring; or
   iii) Monthly vapor monitoring; or
   iv) Monthly groundwater monitoring; or
   v) Other monthly monitoring that meets performance standards:

2. The automatic line leak detector (LLD) must be designed to detect a leak at least as small as 3 gallons per hour at a line pressure of 10 pounds per square inch within 1 hour by shutting off the product flow, restricting the product flow, or triggering an audible or visual alarm.

3. The line tightness test must be able to detect a leak at least as small as 0.1 gallon per hour when the line pressure is 1.5 times its normal operating pressure. The test must be conducted each year. If the test is performed at pressures lower than 1.5 times operating pressure, the leak rate to be detected must be correspondingly lower.

4. Automatic LLDs and line tightness tests must also be able to meet the federal regulatory requirements regarding probabilities of detection and false alarm.

5. Interstitial monitoring, vapor monitoring, groundwater monitoring, and other allowable methods have the same regulatory requirements for piping as they do for tanks.

Leak detection requirements for USTs equipped with suction piping vary depending on the type of suction piping installed (see 40 CFR 280.41(b)(2). One type of suction piping does not require leak detection if it has the following characteristics:

1. below-grade piping operating at less than atmospheric pressure is sloped so that the piping's contents will drain back into the storage tank if the suction is released;

2. only one check valve is included in each suction line and is located directly below the suction pump.

Suction piping that does **not** exactly match the characteristics noted above must have leak detection, either monthly monitoring (using one of the monthly methods noted above for use on pressurized piping) or tightness testing of the piping every 3 yr.

Hazardous Substance USTs
(40 CFR 280.42)
Hazardous substance USTs installed after December 22, 1988 must use secondary containment and interstitial monitoring to provide leak detection compliance. Hazardous substance USTs installed on or before December 22, 1988 must have secondary containment and interstitial monitoring by December 22, 1998.

Spill and Overfill Protection and Control
(40 CFR 280.20(c) and 280.30)
Owners and operators must ensure that there is room in the UST for the delivery before the delivery occurs, and the transfer operation must be monitored constantly to prevent overfilling and spilling. If an UST never receives more than 25 gallons at a time, the UST does not have to meet the spill protection requirements. When a tank is overfilled, large volumes can be released at the fill pipe and through loose fittings on the top of the tank or a loose vent pipe. The tightness of these fittings normally would not be a problem if the tank were not filled beyond its capacity. Many of these problems can be prevented by using overfill protection devices, such as automatic shutoff devices, overfill alarms, and ball float valves. If in the case of "pumped delivery" where fuel is delivered under pressure, the overfill protection device must work compatibly with pumped deliveries. Also, overfill protection devices are effective only when combined with careful filling practices.

USTs must be equipped to prevent spills from reaching the environment, such as the use of catchment basins, also called "spill containment manholes" or "spill buckets." Basically, a catchment basin is a bucket sealed around the fill pipe that traps spilled product and keeps it from reaching the environment.

Corrosion Protection
(40 CFR 280.20(a) and (b) and 280.31)
Federal rules require corrosion protection for USTs because unprotected steel USTs corrode and release product through corrosion holes. New USTs need to match one of the following performance standards:

1. Tank and piping completely made of noncorrodible material, such as fiberglass. Corrosion protection is also provided if tank and piping are completely isolated from contact with the surrounding soil by being enclosed in or "jacketed" in noncorrodible material.

2. Tank and piping made of steel having a corrosion-resistant coating AND having cathodic protection. A corrosion-resistant coating electrically isolates the coated metal from the surrounding environment to help protect against corrosion. *Asphaltic coating does* **not** *qualify as a corrosion-resistant coating.* Methods of cathodic protection include:
   a) *Sacrificial Anode System:* Sacrificial anodes can be attached to the UST for corrosion protection. Sacrificial anodes are pieces of metal more electrically active than the steel UST. Because these anodes are more active, the corrosive current will exit from them rather than the UST. Thus, the UST is protected while the attached anode is "sacrificed."
   b) *Impressed Current System*: An impressed current system uses a rectifier to convert alternating current to direct current. This current is sent through an insulated wire to the anodes, which are special metal bars buried in the soil near the UST. The current then flows through the soil to the UST system, and returns to the rectifier through an insulated wire attached to the UST. The UST system is protected because the current going to the UST system overcomes the corrosion-causing current normally flowing away from it.
   c) Tank made of steel clad with a thick layer of noncorrodible material. This option does not apply to piping. *Galvanized steel is* ***not*** *a noncorrodible material.*

UST Requirements for Closure and Change-in-Service
(40 CFR 280.70 - 280.74)
USTs may be closed temporarily or permanently in accordance with the requirements specified below.

Closing Temporarily
USTs may be closed temporarily for up to 12 mo if the following requirements are met:

1. Owners and operators must continue to monitor for leaks by maintaining the UST's leak detection. (Empty USTs do not require leak detection).

2. Owners and operators of USTs must continue to monitor and maintain any corrosion protection systems.

3. In the event of a detected releases from USTs, owners and operators must take immediate action to prevent any further releases of the regulated substance into the environment, notify the regulatory authority, and take appropriate action to clean up the site.

4. If the UST remains temporarily closed for more than 3 months, owners and operators must leave vent lines open, but cap and secure all other lines, pumps, manways, and ancillary equipment.

Closing Permanently

USTs may be closed permanently if the following requirements are met:

1. Owners and operators must notify the regulatory authority at least thirty days before closure.

2. Owners and operators must determine if contamination from the UST is present in the surrounding environment. If contamination is discovered, the owner and operator must begin corrective action in accordance to 40 CFR 280.60. Owners and operators must also maintain, for a period of at least three years, a record of the actions taken to determine the presence of contamination. As an option, these records may be mailed to the regulatory authority in lieu of maintaining them on site where the tank was closed.

3. The UST must be either excavated and removed or left in the ground providing that the tank is filled with an inert solid material. In both cases the tank must be emptied and cleaned by removing all liquids, dangerous vapor levels, and accumulated sludge.

Financial Responsibility Requirements

(40 CFR 280.90 through 280.116)

The financial responsibility requirements are designed to make sure that someone can pay the costs of cleaning up leaks and compensating third-parties for bodily injury and property damage caused by leaking USTs. Either the owner or the operator of the UST must demonstrate financial responsibility, if the owner and operator are different individuals or firms. It is the responsibility of the owner and operator to decide which one will demonstrate financial responsibility.

Federal and state governments and their agencies that own USTs are not required to demonstrate financial responsibility. Local governments, however, must comply with the financial responsibility requirements.

Both the amount of financial responsibility coverage needed and the date by which it is needed are determined by the type of operation at the facility, the amount of throughput of the tank, and the number of tanks at the facility. Appendix A of this document contains a table which displays five groups of UST owners and operators, compliance deadlines for each group, and required coverage amounts.

Options for demonstrating financial responsibility include:

1. Use state financial assurance funds: The state in which the facility is located may pay for some cleanup and third-party liability costs.

2. Obtain insurance coverage: Insurance may be available from a private insurer or a risk retention group.

3. Obtain a guarantee: A guarantee may be secured for the coverage amount from another firm with whom the owner or operator have a substantial business relationship. The provider of the guarantee has to pass a financial test.

4. Obtain a surety bond: A surety bond is a guarantee by a surety company that it will meet the financial responsibility obligations.

5. Obtain a letter of credit: A letter of credit is a contract involving the owner or operator, an issuer (usually a bank), and a third party (such as the implementing agency) that obligates the issuer to help demonstrate financial responsibility.

6. Pass a financial test: If the owner or operator has a tangible net worth of at least $10 million, they can prove their financial responsibility by passing one of the two financial tests.

7. Set up a trust fund: The owner or operator may set up a fully-funded trust fund administered by a third party to demonstrate financial responsibility.

8. Use other state methods: The owner or operator may also use any additional methods of coverage approved by their state.

Local governments have four additional compliance methods tailored to their special characteristics: a bond rating test, a financial test, a guarantee, and a dedicated fund (all fully described in 40 CFR 280).

Most states have established programs that can help pay for cleanup and third-party liability costs. Owners and operators may be able to use a state financial assurance fund to demonstrate financial responsibility.

Key Compliance Requirements for Hazardous Waste Tanks

Hazardous Waste Generator Requirements
(40 CFR 262)
The responsibilities of any particular facility are based on the amount of hazardous waste being generated in one calendar month. Typical hazardous wastes include solvents, paint, contaminated antifreeze or oil, and sludges. In some states, waste oil and other substances have been classified as a hazardous waste and therefore need to be included in the total amount of waste generated.

Under federal regulations there are three classifications of generators:

1. **A Conditionally Exempt Small Quantity Generator (CESQG)** generates no more than 100 kg (220.46 lb.) of hazardous waste or 1 kg (2.20 lb.) of acutely hazardous waste in a calendar month. A CESQG also may not accumulate on-site more than 1,000 kg (2,204.62 lb.) of hazardous waste at any one time. When either the volume of hazardous waste produced in one calendar month exceeds 100 kg (220.46 lb.) or more than 1,000 kg (2,204.62 lb.) of hazardous waste have accumulated on-site, the facility is required to comply with the more stringent standards applicable to a Small Quantity Generator (SQG). When the volume of acutely hazardous waste exceeds 1 kg of spill residue, contaminated soil, waste or other debris exceeds 100 kg, then the waste is subject to standards applicable to large quantity generators (LQGs);

2. An SQG generates between 100 kg (220.46 lb.) and 1,000 kg (2,204.62 lb.) of hazardous waste in a calendar month. The hazardous waste cannot accumulate on-site for more than 180 days unless the waste is transported more than 200 miles (321.87 km) to a treatment, storage and disposal facility (TSDF). If the hazardous waste must be transported more than 200 miles, it can accumulate for up to 270 days. At no time is there to be more than 6,000 kg (13,227.73 lb.) of hazardous waste accumulated at the facility. When the volume of hazardous waste generated in one month exceeds 1,000 kg (2,204.62 lb.) of nonacutely hazardous waste or 1 kg (2.20 lb.) of acutely hazardous waste or the accumulation time limit is exceeded, the facility is required to comply with the standards for an LQG. When more than 6,000 kg (13,227.73 lb.) of hazardous waste is stored on-site, the SQG is required to obtain a storage permit and comply with the requirements of 40 CFR 264 and 40 CFR 265;

3. An LQG generates more than 1,000 kg (2,204.62 lb.) of hazardous waste in a calendar month. (NOTE: Using water, which weighs approximately 8.34 lbs./gal (3.78 kg/gal or 1 kg/L) as a basis of measurement, 100 kg (220.46 lb.) would equal about 26.4 gal (100 L) (almost one-half of a 55-gal. (208.2 L) drum); 1,000 kg (2,204.62 lb.) would equal about 264 gal (1000 L) (almost five 55-gal. drums)).

Whether the facility is a CESQG, SQG, or a LQG determines whether and how the RCRA regulations apply to that facility. Storage areas connected with generation points are often referred to as 90 day storage areas. Regardless of the amount of hazardous waste generated, the regulations require every facility to test or use knowledge of materials or processes used to determine if its waste is a listed hazardous waste or exhibits one of four hazardous characteristics (ignitability, corrosivity, toxicity, reactivity).

TSDF Requirements
(40 CFR 264 and 265)
The operation of a TSDF is subject to regulation and permitting under federal and state regulations. These regulations are both administrative as well as technical in nature. The administrative standards require that various plans be developed to ensure that emergencies can be dealt with, waste received is properly identified, and operating personnel are adequately trained to operate the TSDF and respond to emergencies. These administrative standards also include requirements that the TSDF be inspected routinely, records of operations be compiled and maintained, and reports of both routine and contingency operations be made to the applicable regulatory agency. The administrative standards also require that a plan for ceasing operations and closing the TSDF be developed, kept on-hand, and updated frequently.

The technical standards which are applicable to TSDFs fall into two classes: general standards which apply to all TSDFs, and specific standards which apply to various types of facilities (e.g., container storage areas, tanks, containment buildings, surface impoundments, waste piles, land treatment facilities, incinerators, landfills, thermal treatment facilities, and chemical, physical, biological treatment facilities).

Administrative and technical standards are applied to a particular facility through a RCRA permit issued to a facility. New TSDFs requiring a permit must submit a two part permit application. Part A is a short, standard form that collects general information about the facility, while Part B of the application is much more extensive and requires the facility to supply detailed and highly technical information. This submission must be made at least 180 days prior to the date on which physical construction is expected to start. Once issued, RCRA permits are valid up to 10 years.

TSDFs fall into two categories: interim status facilities and permitted facilities. Interim status regulations (40 CFR 265) apply to facilities that are eligible to operate under a Part A permit while their Part B permit application is being reviewed. Any facility that is in existence on the effective date of the statutory or regulatory amendments that render the facility subject to permitting requirements is eligible for interim status, provided that the facility notifies U.S. EPA of hazardous waste activity and complies with application requirements under 40 CFR 270.10. Interim status standards are "good housekeeping" types of requirements that must be addressed until a permit is issued. TSDF permit standards (40 CFR 264) are facility-specific requirements that are incorporated into a TSDF permit.

Hazardous Waste Storage Tanks
(40 CFR 264.190 through 264.200, 40 CFR 265.190 through 265.200, 40 CFR 264.1085, 40 CFR 265.1085)
Hazardous waste storage tank requirements are dependent upon the RCRA classification of the facility (e.g., SQG, LQG or TSDF). Tanks at all three types of facilities are required to meet basic requirements including:

1. a hazardous waste may not be placed into a tank if it will cause the tank or its secondary containment system to rupture, leak, corrode, or fail;

2. special precautions are taken for ignitable, incompatible or reactive wastes;

3. the tank is operated using appropriate controls and practices to prevent spills and overflows;

4. periodic inspections are conducted to detect spills, corrosion, leaks, and operator error.

5. at closure, all hazardous waste and residues must be removed from the tank, peripheral equipment and foundation structure.

Tank systems at LQG facilities and TSDFs that store hazardous waste with a high volatile organic concentration must meet emission standards specified under Subpart CC and BB of 40 CFR 264 and 265. These regulations also require generators to test the waste to determine the concentration of the waste, to satisfy tank and container emissions standards, and to inspect and monitor regulated units.

TSDF Requirements - Subpart CC
(40 CFR 264.1080 -1091 and 40 CFR 265.1089 - 1091)
Subpart CC applies to tanks, surface impoundments, containers, and certain miscellaneous units that:

1. are not expressly exempted from the rule;
2. are subject to permit standards (40 CFR 264), interim status standards (40 CFR 265), or less-than 90-day LQG standards (40 CFR 262.34 (a)(1)(i) or (ii) for tanks and containers); and
3. manage hazardous waste that have an average volatile organic concentration at the point of waste origination equal to or greater than 500 parts per million by weight (ppmw).

For further information regarding the RCRA regulations, contact U.S. EPA's RCRA/UST, Superfund and EPCRA *Hotline at 800-424-9346 (or 703-412-9810 in the D.C. area) from 9 a.m. to 6 p.m., Monday through Friday.* A list of other UST documents and publications available from U.S. EPA is presented in Appendix B of this document.

This U.S. EPA hotline provides up-to-date information on regulations developed under RCRA, CERCLA (Superfund), and the Oil Pollution Act. The hotline can assist with Section 112(r) of the Clean Air Act (CAA) and Spill Prevention, Control and Countermeasures (SPCC) regulations. The hotline also responds to requests for relevant documents and can direct the caller to additional tools that provide a more detailed discussion of specific regulatory requirements.

Key Terms and Definitions: Underground Storage Tanks

Aboveground Release
Any release to the surface of the land or to surface water. This includes, but is not limited to, releases from the above-ground portion of an UST system and aboveground releases associated with overfills and transfer operations as the regulated substance moves to or from an UST system (40 CFR 280.12).

Accidental Release
Any sudden or nonsudden release of petroleum from an underground storage tank that results in a need for corrective action and/or compensation for bodily injury or property damage neither expected nor intended by the tank owner or operator (40 CFR 280.92).

Ancillary Equipment
Any devices including, but not limited to, such devices as piping, fittings, flanges, valves, and pumps used to distribute, meter, or control the flow of regulated substances to and from the UST (40 CFR 280.12).

Belowground Release
Any release to the subsurface of the land and to groundwater. This includes, but is not limited to, releases from the below ground portion of an UST system and belowground releases associated with overfills and transfer operations as the regulated substance moves to or from an UST (40 CFR 280.12).

Beneath The Surface of The Ground
Beneath the ground surface or otherwise covered with earthen materials (40 CFR 280.12).

Bodily Injury
This shall have the meaning given to this term by applicable state law; however, this term shall not include those liabilities which, consistent with standard insurance industry practices, are excluded from coverage in liability insurance policies for bodily injury (40 CFR 280.92).

Cathodic Protection
A technique to prevent corrosion of a metal surface by making that surface the cathode of an electrochemical cell. For example, a tank system can be cathodically protected through the application of either galvanic anodes or impressed current (40 CFR 280.12).

Cathodic Protection Tester
A person who can demonstrate understanding of the principles and measurements of all common types of cathodic protection systems as applied to buried or submerged metal piping and tank systems. At a minimum, such persons must 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 (40 CFR 280.12).

CERCLA
Comprehensive Environmental Response Compensation and Liability Act of 1980 as amended (40 CFR 280.12).

Chief Financial Officer
In the case of local government owners and operators, means the individual with the overall authority and responsibility for the collection, disbursement, and use of funds by the local government (40 CFR 280.92).

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 UST (40 CFR 280.12).

Connected Piping
All underground piping including valves, elbows, joints, flanges, and flexible connectors attached to a tank system through which regulated substances flow. For the purpose of determining how much piping is connected to any individual UST system, the piping that joins two UST systems should be allocated equally between them (40 CFR 280.12).

Consumptive Use
With respect to heating oil, means consumed on the premises (40 CFR 280.12).

Controlling Interest
Direct ownership of at least 50 percent of the voting stock of another entity (40 CFR 280.92).

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. Such a person must be accredited or certified as being qualified by the National Association of Corrosion Engineers or be a registered professional engineer who has certification or licensing that includes education and experience in corrosion control of buried or submerged metal piping systems and metal tanks (40 CFR 280.12).

Deferred USTs
USTs which are exempt from meeting the requirements in 40 CFR 280 except those concerning release response and corrective action for UST systems containing petroleum or hazardous substances in 40 CFR 280.60 through 280.67. These tanks include (40 CFR 280.10(c):

1. wastewater treatment tank systems
2. any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954
3. any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A
4. airport hydrant fuel distribution systems
5. UST systems with field-constructed tanks.

(NOTE: See also the UST Definition and Applicability under Key Compliance Requirements for underground storage tanks and the definition for Underground Storage Tank.)

Dielectric Material
A material that does not conduct direct electrical current. Dielectric coatings are used to electrically isolate UST systems from the surrounding soils. Dielectric bushings are used to electrically isolate portions of the UST system (e.g., tank from piping) (40 CFR 280.12).

Director of the Implementing Agency
The U.S. EPA Regional Administrator, or, in the case of a state with a program approved under section 9004, the Director of the designated state or local agency responsible for carrying out an approved UST program (40 CFR 280.92).

Electrical Equipment
Any underground equipment that contains dielectric fluid that is necessary for the operation of equipment such as transformers and buried electric cable (40 CFR 280.12).

Excavation Zone
The volume containing the tank system and backfill material bounded by the ground surface, walls, and floor of the pit and trenches into which the UST system is placed at the time of installation (40 CFR 280.12).

Existing Tank System
A tank system used to contain an accumulation of regulated substances or for which installation has commenced on or before December 22, 1988. Installation is considered to have commenced if (40 CFR 280.12):

1. the owner or operator has obtained all federal, state, and local approvals or permits necessary to begin physical construction of the site or installation of the tank system
2. either a continuous on-site physical construction or installation program has begun, or the owner or operator has entered into any contractual obligations which cannot be canceled or modified without substantial loss for physical construction at the site or installation of the tank system to be completed within a reasonable time.

Farm Tank
A tank located on a tract of land devoted to the production of crops or raising animals, including fish, and associated residences and improvements. A farm tank must be located on the farm property. Farm includes fish hatcheries, rangeland, and nurseries with growing operations (40 CFR 280.12).

Financial Reporting Year
The latest consecutive 12-mo period for which any of the following reports used to support a financial test is prepared (40 CFR 280.92):

1. a 10-K report submitted to the SEC;
2. an annual report of tangible net worth submitted to Dun and Bradstreet; or
3. annual reports submitted to the Energy Information Administration or the Rural Electrification Administration.

"Financial reporting year" may thus comprise a fiscal or a calendar year period.

Flow-Through Process Tank
A tank that forms an integral part of a production process through which there is a steady, variable, recurring, or intermittent flow of materials during the operation of the process. Flow-through process tanks do not include tanks used for the storage of material prior to their introduction into the production process or for the storage of finished products or byproducts from the production process (40 CFR 280.12).

Free-Product
A regulated substance that is present as a nonaqueous phase liquid (e.g., liquid not dissolved in water) (40 CFR 280.12).

Gathering Lines
Any pipeline, equipment, facility, or building used in the transportation of oil or gas during oil or gas production or gathering operations (40 CFR 280.12).

Hazardous Substance UST System
Any UST system that contains a hazardous substance defined in section 101(14) of the *Comprehensive Environmental Response, Compensation, and Liability Act* of 1980 (but not including any substance regulated as a hazardous waste under subtitle C) or any mixture of such substances and petroleum, and which is not a petroleum UST system (40 CFR 280.12).

Heating Oil
Petroleum that is No. 1, No. 2, No. 4--light, No. 4--heavy, No. 5--light, No. 5--heavy, and No. 6 technical grades of fuel oil; other residual fuel oils (including Navy Special Fuel Oil and Bunker C); and other fuels when used as substitutes for one of these fuel oils. Heating oil is typically used in the operation of heating equipment, boilers, or furnaces (40 CFR 280.12).

Hydraulic Lift Tank
A tank holding hydraulic fluid for a closed-loop mechanical system that uses compressed air or hydraulic fluid to operate lifts, elevators, and other similar devices (40 CFR 280.12).

Implementing Agency
U.S. EPA, or, in the case of a state with a program approved under section 9004 (or pursuant to a memorandum of agreement with U.S. EPA), the designated state or local agency responsible for carrying out an approved UST program (40 CFR 280.12).

Legal Defense Cost
Any expense that an owner or operator or provider of financial assurance incurs in defending against claims or actions brought (40 CFR 280.92):
1. by U.S. EPA or a state to require corrective action or to recover the costs of corrective action;
2. by or on behalf of a third party for bodily injury or property damage caused by an accidental release; or
3. by any person to enforce the terms of a financial assurance mechanism.

Liquid Trap
Sumps, well cellars, and other traps used in association with oil and gas production, gathering, and extraction operations (including gas production plants), for the purpose of collecting oil, water, and other liquids. These liquid traps may temporarily collect liquids for subsequent disposition or reinjection into a production or pipeline stream, or may collect and separate liquids from a gas stream (40 CFR 280.12).

Local Government
This shall have the meaning given this term by applicable state law and includes Indian tribes. The term is generally intended to include (40 CFR 280.92):
1. counties, municipalities, townships, separately chartered and operated special districts (including local government public transit systems and redevelopment authorities), and independent school districts authorized as governmental bodies by state charter or constitution; and
2. special districts and independent school districts established by counties, municipalities, townships, and other general purpose governments to provide essential services.

Maintenance
The normal operational upkeep to prevent an UST system from releasing product (40 CFR 280.12).

Motor Fuel
Petroleum or a petroleum-based substance that is motor gasoline, aviation gasoline, No. 1 or No. 2 diesel fuel, or any grade of gasohol, and is typically used in the operation of a motor engine (40 CFR 280.12).

New Tank System
For USTs, a tank system that will be used to contain an accumulation of regulated substances and for which installation has commenced after December 22, 1988 (40 CFR 280.12).

Noncommercial Purposes
With respect to motor fuel means not for resale (40 CFR 280.12).

Occurrence
An accident, including continuous or repeated exposure to conditions, which results in a release from an underground storage tank. NOTE: This definition is intended to assist in the understanding of these regulations and

is not intended either to limit the meaning of "occurrence" in a way that conflicts with standard insurance usage or to prevent the use of other standard insurance terms in place of "occurrence" (40 CFR 280.92).

On the Premises Where Stored (heating oil)
UST systems located on the same property where the stored heating oil is used (40 CFR 280.12).

Operational Life
The period beginning when installation of the tank system has commenced until the time the tank system is properly closed under Subpart G of 40 CFR 280 (40 CFR 280.12).

Operator
Any person in control of, or having responsibility for the daily operation of the UST system (40 CFR 280.12).

Overfill Release
A release that occurs when a tank is filled beyond its capacity, resulting in a discharge of the regulated substance to the environment (40 CFR 280.12).

Owner
1. In the case of an UST system in use on November 8, 1984, or brought into use after that date, any person who owns an UST system used for storage, use, or dispensing of regulated substances; and
2. In the case of any UST system in use before November 8, 1984, but no longer in use on that date, any person who owned such UST immediately before the discontinuation of its use (40 CFR 280.12).

Owner or Operator
When the owner or operator are separate parties, refers to the party that is obtaining or has obtained financial assurances (40 CFR 280.92).

Person
An individual, trust, firm, joint stock company, federal agency, corporation, state, municipality, commission, political subdivision of a state, or any interstate body. Person also includes a consortium, a joint venture, a commercial entity, and the U.S. Government (40 CFR 280.12).

Petroleum Marketing Facilities
This include all facilities at which petroleum is produced or refined and all facilities from which petroleum is sold or transferred to other petroleum marketers or to the public (40 CFR 280.92).

Petroleum Marketing Firms
All firms owning petroleum marketing facilities. Firms owning other types of facilities with USTs as well as petroleum marketing facilities are considered to be petroleum marketing firms (40 CFR 280.92).

Petroleum UST System
A UST system that contains petroleum or a mixture of petroleum with de minimis quantities of other regulated substances. Such systems include those containing motor fuels, jet fuels, distillate fuel oils, residual fuel oils, lubricants, petroleum solvents, and used oils (40 CFR 280.12).

Pipe or Piping
A hollow cylinder or tubular conduit that is constructed of non-earthen materials (40 CFR 280.12).

Pipeline Facilities
(Including gathering lines) are new and existing pipe rights-of-way and any associated equipment, facilities, or buildings (40 CFR 280.12).

Property Damage
This shall have the meaning given this term by applicable state law. This term shall not include those liabilities which, consistent with standard insurance industry practices, are excluded from coverage in liability insurance

policies for property damage. However, such exclusions for property damage shall not include corrective action associated with releases from tanks which are covered by the policy (40 CFR 280.92).

Provider of Financial Assurance
An entity that provides financial assurance to an owner or operator of an underground storage tank through one of the mechanisms listed in 40 CFR 280.95-280.103, including a guarantor, insurer, risk retention group, surety, issuer of a letter of credit, issuer of a state-required mechanism, or a state (40 CFR 280.92).

Regulated Substance
This includes (40 CFR 280.12):
1. any substance defined in section 101(14) of the CERCLA of 1980 (but not including any substance regulated as a hazardous waste under subtitle C)
2. petroleum, including crude oil or any fraction thereof that is liquid at standard conditions of temperature and pressure (60 °F and 14.7 lb/psia).

(NOTE: The term regulated substance includes, but is not limited to, petroleum and petroleum based substances comprised of a complex blend of hydrocarbons derived from crude oil though processes of separation, conversion, upgrading, and finishing, such as motor fuels, jet fuels, distillate fuel oils, residual fuel oils, lubricants, petroleum solvents, and used oils.)

Release
Any spilling, leaking, emitting, discharging, escaping, leaching, or disposing from an UST into groundwater, surface water, or subsurface soils (40 CFR 280.12).

Release Detection
Determining whether a release of a regulated substance has occurred from the UST system into the environment or into the interstitial space between the UST system and its secondary barrier or secondary containment around it (40 CFR 280.12).

Repair
To restore a tank or UST system component that has caused a release of product from the UST system (40 CFR 280.12).

Residential Tank
A tank located on property used primarily for dwelling purposes (40 CFR 280.12).

SARA
Superfund Amendments and Reauthorization Act of 1986 (40 CFR 280.12).

Septic Tank
A water-tight covered receptacle designed to receive or process, through liquid separation or biological digestion, the sewage discharged from a building sewer. The effluent from such receptacle is distributed through the soil and settled solids and scum from the tank are pumped out periodically and hauled to a treatment facility (40 CFR 280.12).

Stormwater or Wastewater Collection System
Piping, pumps, conduits, and any other equipment necessary to collect and transport the flow of surface water run-off resulting from precipitation, or domestic, commercial, or industrial wastewater to and from retention areas or any areas where treatment is designated to occur. The collection of stormwater and wastewater does not include treatment except where incidental to conveyance (40 CFR 280.12).

Substantial Business Relationship
The extent of a business relationship necessary under applicable state law to make a guarantee contract issued incident to that relationship valid and enforceable. A guarantee contract is issued "incident to that relationship" if it arises from and depends on existing economic transactions between the guarantor and the owner or operator (40 CFR 280.92).

Substantial Governmental Relationship
The extent of a governmental relationship necessary under applicable state law to make an added guarantee contract issued incident to that relationship valid and enforceable. A guarantee contract is issued "incident to that relationship" if it arises from a clear commonality of interest in the event of an UST release such as coterminous boundaries, overlapping constituencies, common ground-water aquifer, or other relationship other than monetary compensation that provides a motivation for the guarantor to provide a guarantee (40 CFR 280.92).

Surface Impoundment
A natural topographic depression, man-made excavation, or diked area formed primarily of earthen materials (although it may be lined with man-made materials) that is not an injection well (40 CFR 280.12).

Tangible Net Worth
The tangible assets that remain after deducting liabilities; such assets do not include intangibles such as goodwill and rights to patents or royalties. For purposes of this definition, "assets" means all existing and all probable future economic benefits obtained or controlled by a particular entity as a result of past transactions (40 CFR 280.92).

Tank
A stationary device designed to contain an accumulation of regulated substances and constructed of non-earthen materials (e.g., concrete, steel, plastic) that provide structural support (40 CFR 280.12).

Underground Area
An underground room such as a basement, cellar, shaft, or vault, providing enough space for physical inspection of the exterior of the tank situated on or above the surface of the floor (40 CFR 280.12).

Underground Release
Any below ground release (40 CFR 280.12).

Underground Storage Tank (UST)
Any one or a combination of tanks (including underground pipes connected thereto) that is used to contain an accumulation of regulated substances, and the volume of which (including the volume of underground pipes connected thereto) is 10 percent or more beneath the surface of the ground. This term does not include any (40 CFR 280.12):

1. farm or residential tank of 1100 gal or less capacity used for storing motor fuel for noncommercial purposes
2. tank used for storing heating oil for consumptive use on the premises where stored
3. septic tanks
4. pipeline facility (including gathering lines) that is regulated under:
   a) the Natural Gas Pipeline Safety Act of 1968 (49 U.S.C.A. pp.1671, et. seq.), or
   b) the Hazardous Liquid Pipeline Safety Act of 1979 (49 U.S.C.A. pp. 2001, et. seq.), or
   c) which is an intrastate pipeline facility regulated under state laws comparable to the provisions of the law previously referred to in a) and b) of this definition
5. surface impoundment, pit, pond, or lagoon
6. stormwater or waste water collection system
7. flow-through process tank
8. liquid trap or associated gathering lines directly related to oil or gas production and gathering operations
9. storage tank situated in an underground area (such as a basement, cellar, mineworking, drift, shaft, or tunnel) if the storage tank is situated upon or above the surface of the floor.

(NOTE: The definition of UST does not include any pipes connected to any tank which is described in paragraphs 1 through 9 of this definition.)

(NOTE: See also UST Definition and Applicability under Key Compliance Requirements for Underground Storage Tanks.)

Upgrade
The addition or retrofit of some systems such as cathodic protection, lining, or spill and overfill controls to improve the ability of an UST system to prevent the release of product (40 CFR 280.12).

UST System or Tank System
UST, connected underground piping, underground ancillary equipment, and containment system, if any (40 CFR 280.12).

Wastewater Treatment Tank
A tank that is designed to receive and treat influent wastewater through physical, chemical, or biological methods (40 CFR 280.12).

Key Terms and Definitions: Hazardous Waste and Used Oil Tanks

Aboveground Storage Tank (AST)
In relation to hazardous waste, a device that meets the definition of tank in 40 CFR 260.10 and that is situated in such a way that the entire surface area of the tank is completely above the plane of the adjacent surrounding surface and the entire surface area of the tank (including the tank bottom) is able to be visually inspected (40 CFR 260.10).

Aboveground Tank
A tank used to store or process used oil that is not an UST as defined in 40 CFR 280.12 (40 CFR 279.1)

Administrator
The Administrator of the Environmental Protection Agency (U.S. EPA), or his designee (40 CFR 260.10).

Average Volatile Organic (VO) Concentration
The mass-weighted average VO concentration of a hazardous waste as determined in accordance with the requirements of 40 CFR 265.1084 (40 CFR 265.1081).

Closure Device
A cap, hatch, lid, plug, seal, valve, or other type of fitting that blocks an opening in a cover such that when the device is secured in the closed position it prevents or reduces air pollutant emissions to the atmosphere. Closure devices include devices that are detachable from the cover (e.g., a sampling port cap), manually operated (e.g., hinged access lid or hatch), or automatically operated (e.g., a spring loaded pressure relief valve) (40 CFR 265.1081).

Continuous Seal
A seal that forms a continuous closure that completely covers the space between the edge of the floating roof and the wall of a tank (40 CFR 265.1081).

Cover
A device that provides a continuous barrier over the hazardous waste managed in a unit to prevent or reduce air pollutant emissions to the atmosphere. A cover may have openings (such as access hatches, sampling ports, gauge wells) that are necessary for operation, inspection, maintenance, and repair of the unit on which the cover is used. A cover may be a separate piece of equipment which can be detached and removed from the unit or a cover may be formed by structural features permanently integrated into the design of the unit (40 CFR 265.1081).

Do-It-Yourself (DIY) Used Oil Collection Center
Any site or facility that accepts, aggregates, and stores used oil collected only from household DIYs (40 CFR 279.1).

Enclosure
A structure that surrounds a tank or container, captures organic vapors emitted from the tank or container, and vents the captured vapors through a closed-vent system to a control device (40 CFR 265.1081).

Exempted Hazardous Waste Management Unit
In relation to air emissions standards, this is (40 CFR 264.1080(b) and 265.1080(b):

1. a waste management unit that holds hazardous waste placed in the unit before December 6, 1996, and in which no hazardous waste is added to the unit on or after December 6, 1996
2. a container that has a design capacity less than or equal to 0.1 m^3
3. a tank in which an owner or operator has stopped adding hazardous waste and the owner or operator has begun implementing or completed closure pursuant to an approved closure plan
4. a surface impoundment in which an owner or operator has stopped adding hazardous waste (except to implement an approved closure plan) and the owner or operator has begun implementing or completed closure pursuant to an approved closure plan
5. a waste management unit that is used solely for the on-site treatment or storage of hazardous waste that is generated as the result of implementing remedial activities required under corrective action authorities of RCRA sections 3004(u), 3004(v), or 3008(h); CERCLA authorities; or similar federal or state authorities
6. a waste management unit that is used solely for the management of radioactive mixed waste in accordance with all applicable regulations under the *Atomic Energy Act* and the *Nuclear Waste Policy Act*
7. a hazardous waste management unit that the owner or operator certifies is equipped with and operating air emissions controls in accordance with regulations promulgated as a result of the CAA
8. a tank that has a process vent as defined in 40 CFR 264.1031.

Exempted Hazardous Waste Storage Tanks
Storage tanks are exempt from these air emission requirements if the waste management unit is one of the following (40 CFR 264.1082(c) and 265.1083(c)):

1. tanks for which all hazardous wastes entering the unit has an average VO concentration at the point of waste origination is less than 500 ppmw. This determination is updated at least every 12 mo.
2. tanks for which the organic content of all hazardous wastes entering the unit has been reduced by an organic destruction or removal process that achieves any of the following conditions:
   a) a process that removes or destroys the organics to a level such that the average VO concentration of the hazardous waste at the point of waste treatment is less than the exit concentration limit established for the process
   b) a process that removes or destroys the organics contained in the hazardous waste to such a level that the organic reduction efficiency for the process is equal to or greater than 95 percent, and the average VO concentration of the hazardous waste at the point of waste treatment is less than 100 ppmw
   c) a process that removes or destroys the organics contained in the hazardous waste to such a level that the actual organic mass removal rate for the process is equal to or greater than the required organic mass removal rate established for the process
   d) a biological process that destroys or degrades the organics contained in the hazardous waste such that either of the following is met:
      i) the organic reduction efficiency for the process is equal to or greater than 95 percent and the organic biodegradation efficiency for the process is equal to or greater than 95 percent
      ii) the total actual organic mass biodegradation rate for all hazardous waste treated by the process is equal to or greater than the required organic mass removal rate
   e) a process that removes or destroys the organics contained in the hazardous waste and meets all the following conditions:
      i) from the point of waste origination through the point where the hazardous waste enters the process, the hazardous waste is continuously managed in waste management units which use air emissions controls as applicable to the waste management unit
      ii) from the point of waste origination through the point where the hazardous waste enters the process, any transfer of the hazardous waste is accomplished through continuous hard-piping or other closed system transfer that does not allow exposure of the waste to the atmosphere
      iii) the average VO concentration of the hazardous waste at the point of waste treatment is less than the lowest average VO concentration at the point of waste origination determined for each of the individual hazardous waste streams entering the process or 500 ppmw, whichever value is lower
   f) a process that removes or destroys the organics contained in the hazardous waste to a level such that the organic reduction efficiency for the process is equal to or greater than 95 percent and the owner or operator

certifies that the average VO concentration at the point of waste origination for each of the individual waste streams entering the process is less than 10,000 ppmw

g) a hazardous waste incinerator for which the owner or operator has either been issued a final permit under 40 CFR 270 or has certified compliance with the requirements of 40 CFR 265, Subpart O

h) a boiler or industrial furnace for which the owner or operator has been issued a final permit under 40 CFR 270 or has certified compliance with the requirements of 40 CFR 266, Subpart H.

3. a tank used for biological treatment of hazardous waste such that it degrades or destroys the organics contained in the hazardous waste such that either of the following conditions is met:
   a) organic reduction efficiency for the process is equal to or greater than 95 percent and the organic biodegradation efficiency for the process is equal to or greater than 95 percent
   b) the total actual organic mass biodegradation rate for all hazardous waste treated by the process is equal to or greater than the required organic mass removal rate
4. tanks for which all hazardous waste placed in the unit either:
   a) meets the numerical concentrations limits for organic hazardous constituents as specified in 40 CFR 280
   b) has been treated by the treatment technology established by the U.S. EPA in 40 CFR 268.42 or have been removed or destroyed by an equivalent method of treatment approved by U.S. EPA under 40 CFR 268.42(b).

Existing Tank
A tank that is used for the storage or processing of used oil and that is in operation, or for which installation has commenced on or prior to the effective date of the authorized used oil program for the state in which the tank is located. Installation will be considered to have commenced if the owner or operator has obtained all federal, state, and local approvals or permits necessary to begin installation of the tank and if either (1) A continuous on-site installation program has begun, or (2) The owner or operator has entered into contractual obligations (which cannot be canceled or modified without substantial loss) for installation of the tank to be completed within a reasonable time 40 CFR 279.1).

External Floating Roof
A pontoon or double-deck type cover that rests on the surface of the material being managed in a tank that has no fixed roof (40 CFR 265.1081).

Fixed Roof
A cover that is mounted on a unit in a stationary position and does not move with fluctuations in the level of the material managed in the unit (40 CFR 265.1081).

Floating Membrane Cover
A cover consisting of a synthetic flexible membrane material that rests upon and is supported by the hazardous waste being managed in a surface impoundment (40 CFR 265.1081).

Floating Roof
A cover consisting of a double deck, pontoon single deck, or internal floating cover which rests upon and is supported by the material being contained, and is equipped with a continuous seal (40 CFR 265.1081).

Generator
Any person, by site, whose act or process produces hazardous waste identified or listed in 40 CFR 261, or whose act first causes a hazardous waste to become subject to regulation (40 CFR 260.10).

Household Do-It-Yourselfer Used Oil
Oil that is derived from households, such as used oil generated by individuals who generate used oil through the maintenance of their personal vehicles (40 CFR 279.1).

Household "Do-It-Yourselfer" Used Oil Generator
An individual who generates household "do-it-yourselfer" used oil (40 CFR 279.1).

In-Ground Tank
A device meeting the definition of tank in 40 CFR 260.10 whereby a portion of the tank is situated to any degree within the ground, thereby preventing visual inspection of the external surface of that tank that is in the ground (40 CFR 260.10).

Internal Floating Roof
A cover that rests or floats on the material surface (but not necessarily in complete contact within) inside a tank that has a fixed roof (40 CFR 265.1081).

Malfunction
Any sudden, infrequent, and not reasonably preventable failure of air pollution control equipment, process equipment, or a process to operate in a normal or usual manner. Failures that are caused in part by poor maintenance or careless operations are not malfunctions (40 CFR 265.1081).

Maximum Organic Vapor Pressure
The sum of the individual organic constituent partial pressures exerted by the material contained in a tank, at the maximum vapor pressure causing conditions (i.e. temperature, agitation, pH effects of combining wastes, etc.) reasonably expected to occur in the tank (40 CFR 265.1081).

Metallic Shoe Seal
A continuous seal that is constructed of metal sheets which are held vertically against the well of the tank by springs, weighted levels, or other mechanisms and is connected to the floating roof by braces or other means. A flexible coated fabric spans the annular space between the metal sheet and the floating roof (40 CFR 265.1081).

New Tank
A tank that will be used to store or process used oil and for which installation has commenced after the effective date of the authorized used oil program for the state in which the tank is located (40 CFR 279.1).

New Tank System or New Component System
In relation to hazardous waste, a tank system or component that will be used for the storage and treatment of hazardous waste and for which installation has commenced after July 14, 1986, except however, for purposes of 40 CFR 264.193(g)(2) and 265.193(g)(2), a new tank system is one for which construction commenced after July 14, 1986 (40 CFR 260.10).

No Detectable Organic Emissions
No escape of organics to the atmosphere as determined using the procedure specified in 40 CFR 265.1084(d) (40 CFR 265.1081).

Off-Specification Oil
Used oil burned for energy recovery and any fuel produced from used oil by processing, blending, or other treatment, is subject to 40 CFR 279 requirements unless it is shown not to exceed the following allowable limits (40 CFR 279.11):

Arsenic	5 ppm maximum
Cadmium	2 ppm maximum
Chromium	10 ppm maximum
Lead	100 ppm maximum
Flash point	100 °F minimum
Total halogens	4000 ppm maximum

On ground Tank
In relation to hazardous waste, a device meeting the definition of tank in 40 CFR 260.10 and that is situated in such a way that the bottom of the tank is on the same level as the adjacent surrounding surface so that the external tank bottom cannot be visibly inspected (40 CFR 260.10).

Petroleum Refining Facility
An establishment primarily engaged in producing gasoline, kerosene, distillate fuel oils, residual fuel oils, and lubricants, through fractionation, straight distillation of crude oil, redistillation of unfinished petroleum derivatives, cracking or other processes (i.e., facilities classified as SIC 2911) (40 CFR 279.1).

Point of Waste Treatment
The point where a hazardous waste to be treated in accordance with 40 CFR 265.1083(c)(2) exists the treatment process, Any waste determination shall be made before the waste is conveyed, handled, or otherwise managed in a manner that allows the waste to volatilize to the atmosphere (40 CFR 265.1081).

Processing
Chemical or physical operations designed to produce from used oil, or to make used oil more amenable for production of fuel oils, lubricants, or other used oil-derived product. Processing includes, but is not limited to: blending used oil with virgin petroleum products, blending used oils to meet the fuel specification, filtration, simple distillation, chemical or physical separation, and re-refining (40 CFR 279.1).

Re-Refining Distillation Bottoms
The heavy fraction produced by vacuum distillation of filtered and dehydrated used oil. The composition of still bottoms varies with column operation and feedstock (40 CFR 279.1).

Single Seal System
A floating roof having one continuous seal. This seal may be vapor-mounted, liquid mounted or a metallic shoe seal (40 CFR 265.1081).

Small Quantity Generator
A generator who generates less than 1000 kg of hazardous waste in a calendar month (40 CFR 260.10).

Tank
In relation to hazardous waste, a stationary device designed to contain an accumulation of hazardous waste that is constructed primarily of non-earthen materials (e.g., wood, concrete, steel, plastic) which provide structural support (40 CFR 260.10).

Tank
Any stationary device, designed to contain an accumulation of used oil which is constructed primarily of non-earthen materials, (e.g., wood, concrete, steel, plastic) which provides structural support (40 CFR 279.1).

Tank System
A hazardous waste storage or treatment tank and its associated ancillary equipment and containment system (40 CFR 260.10).

Underground Tank
In relation to hazardous waste, a device meeting the definition of tank in 40 CFR 260.10 whose entire surface area is totally below the surface and covered by the ground (40 CFR 260.10).

Unfit-for-Use Tank System
A tank system that has been determined through an integrity assessment or other inspection to be no longer capable of storing or treating hazardous waste without posing a threat of release of hazardous waste to the environment (40 CFR 260.10).

Used Oil
Any oil that has been refined from crude oil, or any synthetic oil, that has been used and as a result of such use is contaminated by physical or chemical impurities (40 CFR 279.1).

Used Oil Aggregation Point
Any site or facility that accepts, aggregates, and/or stores used oil collected only from other used oil generation sites owned or operated by the owner or operator of the aggregation point, from which used oil is transported to the aggregation point in shipments of no more than 55 gal. Used oil aggregation points may also accept used oil from household DIYs (40 CFR 279.1).

Used Oil Burner
A facility where used oil not meeting the specification requirements in 40 CFR 279.11 is burned for energy recovery in devices identified in 40 CFR 279.61(a) (40 CFR 279.1).

Used Oil Collection Center
Any site or facility that is registered/licensed/ permitted/recognized by a state/county/municipal government to manage used oil and accepts/aggregates and stores used oil collected from used oil generators who bring used oil to the collection centers in shipments of no more than 55 gal. Used oil collection centers may accept used oil from household DIYs (40 CFR 279.1).

Used Oil Fuel Marketer
Any person who conducts either of the following activities (40 CFR 279.1):
1. directs a shipment of off-specification used oil from their facility to a used oil burner,
2. first claims that used oil that is to be burned for energy recovery meets used oil fuel specifications in 40 CFR 279.11.

Used Oil Generator
Any person, by site, whose act or process produces used oil or whose act first causes used oil to become subject to regulation (40 CFR 279.1)

Used Oil Processor/Re-Refiner
A facility that processes used oil (40 CFR 279.1).

Used Oil Transfer Facility
Any transportation-related facility, including loading docks, parking areas, storage areas, and other areas where shipments of used oil are held for more than 24 h and not longer than 35 days during the normal course of transportation (40 CFR 279.1).

Used Oil Transporter
Any person who transports used oil, any person who collects used oil from more than one generator and transports the collected oil, and owners and operators of used oil transfer facilities. Used oil transporters may consolidate or aggregate loads of used oil for purposes of transportation, but, with the following exception, may not process used oil. Transporters may conduct incidental processing operations that occur in the normal course of used oil transportation (e.g., settling and water separation), but that are not designed to produce or make more amenable for production of used oil derived products or used oil fuel (40 CFR 279.1).

Vapor Mounted Seal
A continuous seal that is mounted such that there is a vapor space between the hazardous waste in the unit and the bottom of the seal (40 CFR 265.1081).

Volatile Organic (VO) Concentration
The fraction by weight of the volatile organic compounds in a hazardous waste expressed in terms of ppmw as determined by direct measurement or by knowledge of the waste in accordance with the requirements of 40 CFR 265.1084 (40 CFR 265.1081).

Waste Stabilization Process
Any physical or chemical process used to either reduce the mobility of hazardous constituents in a hazardous waste or eliminate free liquids (40 CFR 265.1081).

Typical Records To Review

- UST records regarding leak detection performance and maintenance including:
  - monitoring results over the last 12 months
  - most recent tank tightness test(s)
  - manual tank gauging records
  - copies of performance claims provided by leak detection equipment manufacturers
  - records of recent maintenance, repair and calibration of on-site leak detection equipment
- Records of required inspections and test of corrosion protection systems
- Records of repairs or upgrades to UST systems
- Site assessment results of closed USTs
- Spill Prevention Control and Countermeasure (SPCC) Plans
- Spill Response Plans
- Results of AST integrity assessments, sampling, monitoring, inspection and repair work
- Notification forms and registration records for all in-service, temporarily out-of-service, and permanently closed tanks
- Financial responsibility documentation

Typical Physical Features To Inspect

- Bulk storage tank farms
- Transfer terminals
- *Secondary containment structures*
- Tank peripheral piping, manifolds, filling and dispensing areas
- Dispenser pumps and check valves
- Tank sumps, manway areas
- Leak detection equipment
- Overflow alarms or other audible and visual alarms, sight gauges
- Fill ports, catchment basins
- Oil/water separators
- Cleanup equipment (e.g. absorbent materials, fuel recovery pumps, personal protective gear)

List of Acronyms and Abbreviations

AST	aboveground storage tanks
ASTM	American Society for Testing and Materials
BOP	blowout prevention
C	celcius
CAA	Clean Air Act
CERL	U.S. Army Corps of Engineers Construction Engineering Reasearch Laboratory
CESQG	conditionally exempt small quantity generator
CFC	chlorofluorocarbons
CFR	Code of Federal Regulations
cm	centimeter
cm^2	square centimeter
CWA	Clean Water Act
DIY	do-it-yourself
DOT	Department of Transportation
EO	Executive Order
EPA	Environmental Protection Agency
F	fahrenheit
FR	Federal Register
ft	foot/feet
ft^2	square feet
ft^3	cubic feet
gal	gallon
h	hour
in.	inch
kg	kilogram
km	kilometer
Kpa	kilopascal
L	liter
LQG	large quantity generator
lb	pound
m	meter
m^2	square meter
m^3	cubic meter
µg	microgram
mg	milligram
min	minute
mL	milliliter
µm	micrometer
mo	month
MW	mega watts
NFPA's	National Fire Protection Association's
NOV	Notice of Violation
NRC	National Response Center
OSC	On-Scene Coordinator
ppm	part per million
ppmw	part per million by weight
PFA	probability of false alarm
PREP	preparedness for response exercise program
RCRA	Resource Conservation and Recovery Act
SQG	small quantity generator
SPCC	Spill Prevention Control and Countermeasure Plan

TSDF	treatment, storage, and disposal facility
USC	U.S. Code
U.S. EPA	U.S. Environmental Protection Agency
UST	underground storage tanks
VO	volatile organic
yd^2	square yard
yr	year

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Index for Checklist Users

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Checklist

COMPLIANCE CATEGORY STORAGE TANK MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
GENERAL **ST.1**	
ST.1.1. The current status of any ongoing or unresolved consent orders, compliance agreements, notice of violations (NOVs), inter-agency agreements, or equivalent state enforcement actions should be examined.	Determine if noncompliance issues have been resolved by reviewing a copy of the previous report, consent orders, compliance agreements, NOVs, interagency agreements, or equivalent state enforcement actions. (NOTE: For those open items, indicate what corrective action is planned and milestones established to correct problems.)
ST.1.2. Facilities are required to comply with all applicable federal regulatory requirements not contained in this checklist.	Determine if any new regulations have been issued since the finalization of this document. If so, annotate checklist to include new standards. Determine if the facility has activities or facilities which are regulated, but not addressed in this checklist. Verify that the facility is in compliance with all applicable and newly issued regulations.
ST.1.3. Facilities are required to comply with state and local regulations concerning spill plan and storage tanks management.	Verify that the facility is complying with state and local requirements. Verify that the facility is operating according to permits issued by the state or local agencies. (NOTE: Issues typically regulated by state and local agencies include: – operational standards – permitting requirements – replacement and removal schedules – cathodic protection requirements – alarm system requirements.)

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	COMPLIANCE CATEGORY STORAGE TANK MANAGEMENT
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
ST.300 **UNDERGROUND STORAGE TANK INSTALLATION AND UPGRADING**	

ST.300.1. Existing UST systems were required meet the standards for new USTs, be upgraded, or closed by December 22, 1998 (40 CFR 280.10(c) and 280.21(a) through 280.21(d)).	(NOTE: An existing UST system is; one used to contain an accumulation of regulated substances on or before December 22, 1988 or one for which installation commenced on or before December 22, 1998.)
	
	Verify that existing USTs meet one of the following standards:
	
	– the performance standards for new USTs in 40 CFR 280.20 (see checklist items ST.300.2 through ST.300.4)
	– upgrading requirements outlined in 40 CFR 280.21(b) through 40 CFR 280.21(d) (see checklist items ST.300.1)
	– closed according to 40 CFR 280.70 through 280.74 (see checklist items ST.390.1 through ST.390.6 and ST.400.4).
	
	Verify that, if upgrading is the chosen option, the upgrading of steel USTs includes one of the following methods in accordance with a code of practice developed by a nationally recognized association or independent testing laboratory:
	
	– internal lining according to the following requirements:
	  – lining is installed according to 40 CFR 280.33 (see checklist item ST.350.2)
	  – within 10 yr after lining, and every 5 yr thereafter, the lined tank is inspected internally and found to be structurally sound, with the lining still performing in accordance with original design specifications
	– cathodic protection with field-installed systems designed by a corrosion expert, impressed current systems designed to allow determination of the current operating status, or an approved equivalent system and the integrity is assured by one of the following:
	  – tank is internally inspected and assessed to ensure that the tank is structurally sound and free of corrosion holes prior to installing the cathodic protection system
	  – the tank has been installed for less than 10 yr and is monitored monthly for releases (see Appendix C of this document) in accordance with 40 CFR 280.43(d) through (h)
	  – the tank has been installed for less than 10 yr and is assessed for corrosion holes by conducting two tightness tests, one before and one 3 to 6 mo after first operation of the cathodic protection system
	  – tank is assessed for corrosion holes by a method that is determined to

REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	COMPLIANCE CATEGORY STORAGE TANK MANAGEMENT REVIEWER CHECKS
	be equally protective by the implementing agency – internal lining combined with cathodic protection: – if lining is installed according to requirements in 40 CFR 280.33 – if the cathodic protection system meets the following: – field-installed systems are designed by a corrosion expert – impressed current systems are designed to allow determination of the current operating status – cathodic protection systems are maintained and operated in accordance with 40 CFR 280.31 (see checklist item ST.350.1). Verify that metal piping that routinely contains regulated substances and is in contact with the ground is cathodically protected in accordance with a code of practice developed by a nationally recognized association or independent testing laboratory meets the following: – field-installed systems are designed by a corrosion expert – impressed current systems are designed to allow determination of the current operating status – cathodic protection systems are maintained and operated in accordance with 40 CFR 280.31 (see checklist item ST.350.1). Verify that when spill and overfill equipment is added, it meets the standards in 40 CFR 280.20(c) (see checklist item ST.300.2) for new USTs. (NOTE: The following types of USTs are not subject to these requirements: – wastewater treatment tank systems – any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954 – any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A – airport hydrant fuel distribution systems – UST system with field-constructed tanks.) (NOTE: A new UST system is one that will be used to contain an accumulation of regulated substances and for which installation has commenced after December 22, 1988.)
ST.300.2. New UST systems must be constructed in such a manner that they will remain structurally sound for their operating life (40 CFR 280.10(c), 280.20(a), and 280.20(b)).	Verify that each UST is properly designed and constructed, and any portion underground that routinely contains product is protected from corrosion in accordance with a code of practice developed by a nationally recognized association or independent testing laboratory and the tank is constructed of one of the following materials: – fiberglass-reinforced plastic – steel which has cathodic protection in the following manner:

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	– coated with a suitable dielectric material – field installed cathodic protection designed by a corrosion expert – impressed current systems which allow determination of current operating status as required in 40 CFR 280.31(c) (see checklist item ST.350.1) – cathodic protection systems are operated and maintained in accordance with 40 CFR 280.31 or according to a guideline established by the implementing agency (see checklist item ST.350.1) – steel-fiberglass-reinforced-plastic composite – metal without additional corrosion protection provided that: – the tank is installed at a site that has been determined by a corrosion expert not to be corrosive enough to cause it to have a release due to corrosion during the operating life of the tank – records are maintained for the operating life of the tank that it is in a corrosion free environment – tank construction and corrosion protection are determined by the implementing agency to be designed to prevent the release or threatened release of any stored regulated substance in a manner that is as protective of human health and the environment as the above criteria. NOTE: Piping must also meet the same criteria above. However, piping cannot be constructed of steel-fiberglass-reinforced-plastic composite.) NOTE: The following types of USTs are not subject to these requirements: – wastewater treatment tank systems – any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954 – any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A – airport hydrant fuel distribution systems – UST system with field-constructed tanks.)
ST.300.3. New UST systems are required to be fitted with spill and overfill prevention equipment (40 CFR 280.10(c) and 280.20(c)).	Verify that spill prevention equipment will prevent a release of product to the environment when the transfer hose is detached from the fill pipe. Verify that overfill prevention equipment does one of the following: – automatically shuts off flow into the tank when the tank is no more than 95 percent full – alerts the transfer operator when the tank is no more than 90 percent full by restricting the flow into the tank or triggering a high-level alarm – restrict flow 30 min prior to overfilling, alert the operator with a high-level alarm 1 min before overfilling, or automatically shut off flow into the tank so that none of the fittings are exposed to product due to overfilling.

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	(NOTE: This spill and overfill equipment is not required if approved equivalent equipment is used or the UST system is filled by transfers of no more than 25 gal at one time.) (NOTE: All existing tanks were to be upgraded by 1998. The state may have had an earlier deadline.) (NOTE: The following types of USTs are not subject to these requirements: – wastewater treatment tank systems – any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954 – any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A – airport hydrant fuel distribution systems – UST system with field-constructed tanks.)
ST.300.4. Installation of new UST systems must be certified and done according to standard practices (40 CFR 280.10(c), 280.20(d), and 280.20(e)).	Determine if new UST systems have been properly installed by reviewing records for certification. Verify that installation of tanks and piping is done in accordance with a code of practice developed by a nationally recognized association or independent testing laboratory and in accordance with the manufacturer's instructions. Verify that one or more of the following methods of certification, testing, or inspection is used to demonstrate compliance: – the installer has been certified by the tank and piping manufacturer – the installer has been certified or licensed by the implementing agency – the installation has been inspected and certified by a registered professional engineer with education and experience in UST system installation – the installation has been inspected and approved by the implementing agency – all work listed in the manufacturer's installation checklists has been completed – the owner and operator have complied with another method for ensuring compliance that is determined by the implementing agency to be no less protective of human health and the environment.. (NOTE: The following types of USTs are not subject to these requirements: – wastewater treatment tank systems – any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954 – any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission

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	under 10 CFR 50, Appendix A – airport hydrant fuel distribution systems – UST system with field-constructed tanks.)
ST.300.5. UST systems must be made of or lined with materials compatible with the substance stored (40 CFR 280.10(c) and 280.32).	Verify that the UST system is made or lined with materials that are compatible with the substances stored in it. Determine which USTs are being used to store a substance other than that for which it was originally intended. (NOTE: The following types of USTs are not subject to these requirements: – wastewater treatment tank systems – any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954 – any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A – airport hydrant fuel distribution systems – UST system with field-constructed tanks.)
ST.300.6. Deferred UST systems are required to meet specific standards (40 CFR 280.10(c) and 280.11)	Verify that no one installs a deferred UST for storing regulated substance unless the UST system (whether of single- or double-wall construction): – will prevent releases due to corrosion or structural failure for the operational life of the system – is cathodically protected against corrosion, constructed of noncorrodible materials, steel clad with noncorrodible material, or designed in a manner to prevent the release or any threatened release of any stored substance – is constructed or lined with material that is compatible with the stored substance. (NOTE: UST systems without corrosion protection may be installed at a site that is determined by a corrosion expert not to be corrosive enough to cause it to have a release due to corrosion during its operating life. Records, documenting compliance with this installation requirement, must be kept for the life of the tank.) Verify that deferred systems meet the standards concerning release response and action for USTs containing petroleum or a hazardous substance found in 40 CFR 280.60 through 280.67 (see checklist items ST.380.3 through ST.380.7 and ST.400.5). (NOTE: The following types of USTs are deferred USTs: – wastewater treatment tank systems – any UST systems containing radioactive material that are regulated under the

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	Atomic Energy Act of 1954 – any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A – airport hydrant fuel distribution systems – UST system with field-constructed tanks.)

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ST.320 **UNDERGROUND STORAGE TANK FILLING**	
ST.320.1. The filling of an UST must include the prevention of overfilling and spilling of the regulated substance (40 CFR 280.10(c) and 280.30(a)).	Determine if there is a problem with overfilling of USTs or spills by observing the filling operations, reviewing records, and checking the ground around the fill-lines for visible or odorous indications of contamination. Verify that the level of the UST is checked before a transfer is made and that the volume available in the tank is greater than the volume of the product to be transferred to the tank. Verify that the transfer operation is monitored constantly. (NOTE: The following types of USTs are not subject to these requirements: – wastewater treatment tank systems – any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954 – any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A – airport hydrant fuel distribution systems – UST system with field-constructed tanks.)
ST.320.2. Spills or overfills from UST systems are required to be contained, cleaned up, and reported to the implementing agency within 24 h in specific situations (40 CFR 280.10(c), 280.30(b), and 280.53).	Verify that any and all spills or overfills which meet the following criteria have been contained, cleaned up, and reported to the implementing agency within 24 h, or another reasonable time period specified by the implementing agency, and corrective actions started: – spills or overfills of petroleum that result in a release to the environment of more than 25 gal, or another reasonable amount specified by the implementing agency, or that caused a sheen on nearby surface water – spills or overfills of hazardous substances that result in a release to the environment in excess of the reportable quantity under CERCLA. (NOTE: Spills or overfills of hazardous substances to the environment equal to or greater than the reportable quantity must be immediately reported to the National Response Center (NRC).) Verify that a spill or overfill of petroleum that is less than 25 gal, or another reasonable amount specified by the implementing agency, and a spill or overfill of a hazardous substance that is less than the reportable quantity is contained and

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	immediately cleaned up. Verify that, if the cleanup of these lesser quantities above cannot be accomplished within 24 h, or another reasonable time period established by the implementing agency, the implementing agency is notified. (NOTE: The following types of USTs are not subject to these requirements: – wastewater treatment tank systems – any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954 – any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A – airport hydrant fuel distribution systems – UST system with field-constructed tanks.)

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ST.350 **UNDERGROUND STORAGE TANK REPAIRS AND CORROSION PROTECTION**	
ST.350.1. Steel UST systems with corrosion protection must meet specific requirements (40 CFR 280.10(c) and 280.31).	Determine which steel UST systems have corrosion protection. Verify that the corrosion protection systems are operated and maintained to continuously provide corrosion protection to the metal components of that portion of the tank and piping that routinely contain regulated substances and are in contact with the ground. Verify that all UST systems equipped with cathodic protection systems are inspected for proper operation by a qualified cathodic protection tester in accordance with the following: – all cathodic protection systems are tested within 6 mo of installation and at least every 3 yr thereafter or according to another reasonable time frame established by the implementing agency – criteria used to determine cathodic protection is adequate is in accordance with a code of practice developed by a nationally recognized association. Verify that UST systems with impressed current cathodic protection are inspected every 60 days to ensure the equipment is running properly Verify that inspection records are maintained of the last three inspections for systems with impressed current cathodic protection and of the last two inspections for all other cathodic protection systems. (NOTE: The following types of USTs are not subject to these requirements: – wastewater treatment tank systems – any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954 – any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A – airport hydrant fuel distribution systems – UST system with field-constructed tanks.)

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ST.350.2. Repairs to USTs nust be performed according o industry code (40 CFR 280.10(c) and 280.33).	Determine if there have been any repairs by reviewing the records and interviewing personnel. Verify that repairs to UST systems are properly conducted in accordance with a code of practice developed by a nationally recognized association or an independent testing laboratory. Determine who does repairs to USTs and that the following procedures are used to repair USTs: – fiberglass reinforced plastic tanks may be repaired by the manufacturer's authorized representative or in accordance with a code of practice developed by a nationally recognized association or an independent testing laboratory – metal pipe fittings and sections that have leaked due to corrosion must be replaced, whereas fiberglass pipes and fittings may be repaired according to manufacturer's specifications. Verify that tanks and piping that have been replaced or repaired undergo tightness testing within 30 days following the date of completion of the repair. (NOTE: Tanks and piping need not be tested if one of the following is met: – repairs are internally inspected in accordance with a code of practice developed by a nationally recognized association or an independent testing laboratory – the repaired portion is already monitored monthly for releases – an equally protective test as determined by the implementing agency is used.) Verify that within 6 mo of repair, tanks with cathodic protection systems are tested as follows: – every 3 yr thereafter for all cathodic protection systems – every 60 days for impressed current cathodic protection systems. Verify that records of repairs that demonstrate compliance with these requirements are maintained for the operating life of the tank. (NOTE: The following types of USTs are not subject to these requirements: – wastewater treatment tank systems – any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954 – any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A – airport hydrant fuel distribution systems – UST system with field-constructed tanks.)

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ST.370 **RELEASE DETECTION FOR UNDERGROUND STORAGE TANKS**	
ST.370.1. New and existing USTs are required to provide a method, or combination of methods of release detection (40 CFR 280.10(c), 280.10(d), 280.40(a), and 280.40(d)).	Verify that owners and operators of new and existing UST systems provide a method, or combination of methods, of release detection that: – can detect a release from any portion of the tank and the connected underground piping that routinely contains product – is installed, calibrated, operated, and maintained in accordance with the manufacturer's instructions, including routine maintenance and service checks for operability or running condition, and – meets the performance requirements in 40 CFR 280.43 or 280.44, with any performance claims and their manner of determination described in writing by the equipment manufacturer or installer (see Appendix C of this document). Verify that methods used are capable of detecting the leak rate or quantity specified for that method with a probability of detection (Pd) of 0.95 and a probability of false alarm (PFA) of 0.05. Verify that existing UST systems that cannot apply a compliant method of release detection are closed in accordance with 40 CFR 280.70 through 280.74 (see checklist item ST.390.1 through ST.390.6 and ST.400.4). (NOTE: The following types of USTs are not subject to these requirements: – wastewater treatment tank systems – any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954 – any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A – airport hydrant fuel distribution systems – UST system with field-constructed tanks – UST system that stores fuel solely for use by emergency power generators.)
ST.370.2. UST systems containing petroleum must meet specific release detection system requirements (40 CFR 280.10(c), 280.10(d), 280.41, 280.43, and 280.44).	Verify that tanks are monitored every 30 days using one of the following methods (details of methods are provided in Appendix C of this document): – automatic tank gauging – vapor monitoring – groundwater monitoring – interstitial monitoring

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	– other acceptable methods.
	
	(NOTE: The following are exceptions:
	– UST systems that meet performance standards for new or upgraded systems (40 CFR 280.20 and 280.21, see checklist items ST.300.1 through ST.300.4) and monthly inventory requirements may use tank tightness testing at least every 5 yr until December 22, 1998 or until 10 yr after the tank is upgraded or installed, whichever is later
	– UST systems that do not meet performance standards for new or upgraded systems (40 CFR 280.20 and 280.21, see checklist items ST.300.1 through ST.300.4), may use monthly inventory controls and annual tank tightness testing until December 22, 1998, at which time the tank must be upgraded or permanently closed
	– tanks that hold less than 550 gal or less may use weekly tank gauging.)
	
	(NOTE: See Appendix B of this document for a description of monthly monitoring requirements and tank tightness testing requirements.)
	
	Verify that underground piping which routinely contains a regulated substance is monitored for releases in a manner that meets one of the following requirements:
	
	– pressurized piping:
	  – equipped with automatic line leak detector
	  – annual tightness testing or monthly monitoring.
	– suction piping:
	  – line tightness testing every 3 yr or acceptable monthly monitoring
	  – no release detection system is needed for suction piping which is below grade and meets all of the following standards:
	  – operates at less than atmospheric pressure
	  – is sloped so that contents of pipe will roll back to tank when suction is released
	  – only one check valve is included in each suction line
	  – the check valve is located directly below and as close as practical to the suction pump.
	
	(NOTE: The following types of USTs are not subject to these requirements:
	– wastewater treatment tank systems
	– any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954
	– any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A
	– airport hydrant fuel distribution systems
	– UST system with field-constructed tanks
	– UST system that stores fuel solely for use by emergency power generators.)

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T.370.3. Hazardous ıbstance USTs must meet ɔecific release detection ;andards (40 CFR 280.10(c), 80.10(d), 280.42(b)).	Verify that release detection at new hazardous substance UST systems meets all of the following requirements:
	
	– secondary containment systems are designed, constructed and installed to:
	  – contain regulated substances released from the tank system until they are detected and removed
	  – prevent the release of regulated substances to the environment at any time during the operational life of the UST system
	  – be checked for evidence of a release at least every 30 days.
	– double-walled tanks are designed, constructed, and installed to:
	  – contain a release from any portion of the inner tank within the outer wall
	  – detect the failure of the inner wall
	– external liners (including vaults) are designed, constructed, and installed to:
	  – contain 100 percent of the capacity of the largest tank within its boundary
	  – prevent the interference of precipitation or ground-water intrusion with the ability to contain or detect a release of regulated substances
	  – surround the tank completely (i.e., it is capable of preventing lateral as well as vertical migration of regulated substances)
	– underground piping is equipped with secondary containment systems that are designed, constructed and installed to:
	  – contain regulated substances released from the tank system until they are detected and removed
	  – prevent the release of regulated substances to the environment at any time during the operational life of the UST system
	  – be checked for evidence of a release at least every 30 days.
	– underground piping that conveys regulated substances under pressure is equipped with an automatic line leak detector.
	
	(NOTE: The provisions of 40 CFR 265.193 Containment and Detection of Releases may be used to comply with these requirements (see checklist item ST.540.1 through ST.540.2 and ST.560.1 through ST.560.2).)
	
	(NOTE: Other methods of release detection may be used if owners and operators ɔerform all of the following:
	– demonstrate to the implementing agency that an alternate method can detect a release of the stored substance as effectively as any of the methods allowed in 40 CFR 280.43(b) through (h) can detect a release of petroleum (see Appendix C of this document)
	– provide information to the implementing agency on effective corrective action technologies, health risks, and chemical and physical properties of the stored substance, and the characteristics of the UST site
	– obtain approval from the implementing agency to use the alternate release detection method before the installation and operation of the new UST system.)

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	(NOTE: The following types of USTs are not subject to these requirements: – wastewater treatment tank systems – any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954 – any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A – airport hydrant fuel distribution systems – UST system with field-constructed tanks – UST system that stores fuel solely for use by emergency power generators.)
ST.370.4. Existing hazardous substance USTs must have met specific release detection standards by December 22, 1998 (40 CFR 280.10(c), 280.10(d), 280.42(a)).	Verify that existing hazardous substance USTs meet the release detection requirements for new hazardous substance USTs by December 22, 1998 (see checklist item ST.370.3). (NOTE: The following types of USTs are not subject to these requirements: – wastewater treatment tank systems – any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954 – any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A – airport hydrant fuel distribution systems – UST system with field-constructed tanks – UST system that stores fuel solely for use by emergency power generators.)

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ST.380 **UNDERGROUND STORAGE TANK RELEASES**	

ST.380.1. Releases from UST systems are required to be reported under specific conditions (40 CFR 280.10(c), 280.40(b), and 280.50).	Verify that, when a release detection method operated in accordance with the performance standards in 40 CFR 280.43 and 280.44 (see Appendix C in this document) indicates a release may have occurred, the implementing agency is notified in accordance with 40 CFR 280.50 through 280.53 (see checklist items ST.320.2, ST.380.1 and ST.380.2).
	
	Determine if any and all releases that meet any of the following conditions were reported:
	
	– released regulated substances found at the UST site or in the surrounding area (such as the presence of free product or vapors in soils, basements, sewer and utility lines, and nearby surface waters)
	– unusual operating conditions observed such as the erratic behavior of dispensing equipment or a sudden loss of product unless it is determined the problem lies in the equipment but it is not leaking and is immediately repaired or replaced
	– monitoring results from a release detection method operated in accordance with the performance standards in 40 CFR 280.41 and 280.42 (see Appendix C of this document) indicates a possible release, unless one of the following occurs:
	  – the monitoring device is found to be defective, and is immediately repaired, recalibrated, or replaced, and additional monitoring does not confirm the initial result
	  – in the case of inventory control, a second month of data does not confirm the initial result.
	
	Verify that the implementing agency was notified within 24 h (or another reasonable time period specified by the implementing agency) of the release.
	
	(NOTE: The following types of USTs are not subject to these requirements:
	– wastewater treatment tank systems
	– any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954
	– any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A
	– airport hydrant fuel distribution systems
	– UST system with field-constructed tanks.)

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ST.380.2. All suspected releases of a regulated substances requiring reporting within 7 days must be investigated and confirmed unless a corrective action is started immediately as detailed in 40 CFR 280.60 through 280.67 (40 CFR 280.10(c) and 280.52).	Verify that all suspected releases of a regulated substances requiring reporting within 7 days, or another reasonable time period specified by the implementing agency, are investigated and confirmed unless a corrective action is started immediately as detailed in 40 CFR 280.60 through 280.67 Verify that confirmation is done using tightness testing to determine whether a leak is in the tank, the delivery piping, or both. (NOTE: If the test results for the system, tank or delivery piping indicate that a leak has occurred, repair, replacement, or upgrade actions, and corrective actions must be started.) (NOTE: If the test results, for the system, tank or delivery piping do not indicate a leak and environmental contamination is not the basis for suspecting a release, no further investigation is needed.) Verify that, if environmental contamination is the basis for suspecting a leak, and the tightness test does not indicate a leak exists, a site check is done which measures for the presence of a release in the areas where contamination is most likely to be present. Verify that, when selecting sample types, sample locations, and measurement methods for a site check, owners and operators consider the nature of the stored substance, the type of initial alarm or cause for suspicion, the type of backfill, the depth of groundwater, and other factors appropriate for identifying the presence and source of the release. (NOTE: If the test results or excavation zone or UST site indicate that a release has occurred, owners and operators must begin corrective action in accordance with 40 CFR 280.60 through 280.67 (see checklist items ST.380.2 through ST.380.7, and ST.400.5).) (NOTE: The following types of USTs are not subject to these requirements: – wastewater treatment tank systems – any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954 – any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A – airport hydrant fuel distribution systems – UST system with field-constructed tanks.)

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ST.380.3. Specific initial response actions must be performed within 24 h of a confirmed release from petroleum or hazardous substance USTs (40 CFR 280.60 and 280.61).	Verify that all of the following initial response actions are performed **within 24 h** of a release from petroleum or hazardous substance USTs, or within another reasonable period of time determined by the implementing agency: – report the release to the implementing agency – take immediate action to prevent any further release of the regulated **substance into the environment** – identify and mitigate fire, explosion, and vapor hazards. NOTE: These requirements do not apply to excluded USTs under 40 CFR 280.10(b) (see the definitions) or USTs exempted under the RCRA Subtitle C Section 3004(u) corrective action requirements.) NOTE: A RCRA Subtitle C, Section 3004(u) UST is a UST containing a hazardous waste at a RCRA Subtitle C permitted facility. A release from such a UST would be handled as required under the RCRA permit's corrective action plan.)
ST.380.4. Specific initial abatement measures and site checks must be performed when there is a confirmed release from petroleum or hazardous substance USTs unless directed to do otherwise by the implementing agency (40 CFR 280.60 and 280.62).	Verify that all of the following abatement actions are performed, unless the facility is directed to do otherwise by the implementing agency: – removal of as much of the substance as is necessary to prevent further release from the UST system – visual inspection of aboveground releases or exposed belowground releases is done and further migration of the released substance into surrounding soils and groundwaters is prevented – continued monitoring and mitigation of any fire and safety hazards caused by vapors or free product that may have migrated from the UST excavation zone and entered into subsurface structures (such as sewers or basements) – remedy hazards from contaminated soils that are excavated or exposed as a result of release confirmation, site investigation, abatement, or corrective action – measurements are done for the presence of a release where the contamination is most likely to be present unless the presence and source of the release has previously been confirmed – an investigation is done for the presence of free product and the removal of free product is done as soon as possible. Verify that within 20 days after release confirmation, or within another reasonable period of time determined by the implementing agency, a report is submitted to the implementing agency summarizing the initial abatement steps and any resulting information or data. NOTE: These requirements do not apply to excluded USTs under 40 CFR 280.10(b) or USTs exempted under the RCRA Subtitle C Section 3004(u)

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	corrective action requirements.) (NOTE: A RCRA Subtitle C, Section 3004(u) UST is a UST containing a hazardous waste at a RCRA Subtitle C permitted facility. A release from such a UST would be handled as required under the RCRA permit's corrective action plan.)
ST.380.5. When there is a confirmed release from petroleum or hazardous substance UST, information about the site and nature of the release unless must be assembled unless directed to do otherwise by the implementing agency (40 CFR 280.60 and 280.63).	Verify that, unless otherwise directed to do so by the implementing agency, owners and operators assemble information about the site and the nature of the release, including information gained while confirming the release or completing initial abatement measures. Verify that, specifically, this information includes but is not limited to: – data on the nature and estimated quantities of the release – data from available sources and/or site investigations concerning surrounding populations, water quality, use and approximate locations of wells potentially affected, subsurface soil conditions, locations of subsurface sewers, climatological conditions, and land use – results of site check – results of free product investigation. Verify that within 45 days of the release confirmation, or another reasonable period of time determined by the implementing agency, this information is submitted to the implementing agency in a manner which demonstrates its applicability and technical adequacy, or in a format required by the implementing agency. (NOTE: These requirements do not apply to excluded under 40 CFR 280.10(b) USTs or USTs exempted under the RCRA Subtitle C Section 3004(u) corrective action requirements.) (NOTE: A RCRA Subtitle C, Section 3004(u) UST is a UST containing a hazardous waste at a RCRA Subtitle C permitted facility. A release from such a UST would be handled as required under the RCRA permit's corrective action plan.)

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ST.380.6. When there is a confirmed release from a petroleum or hazardous substance UST and site investigations have indicated free product, the free product must be removed to the maximum extent practicable as determined by the implementing agency (40 CFR 280.60 and 280.64).	Determine if there are any release sites where free product has been confirmed. Verify that the free product is removed to the maximum extent practicable as determined by the implementing agency while continuing initial response measures, initial abatement measures and site checks, site investigations, and preparing for investigations for soil and groundwater cleanup and the development of the corrective action plan. Verify that free product removal is done so that the spread of contamination into previously uncontaminated zones is minimized by using recovery and disposal techniques appropriate to the hydrogeologic conditions at the site, and that properly treats, discharges, or disposes of recovery byproducts in compliance with applicable regulations. Verify that the abatement of free product migrations is used as a minimum objective for the design of the free product removal system and any flammable products are handled in a safe and competent manner to prevent fires or explosions. Verify that, unless directed otherwise by the implementing agency, within 45 days after confirming a release, a free product removal report is submitted to the implementing agency that includes at least the following: – the name of the person responsible for implementing the free product removal measures – the estimated quantity, type, and thickness of free product observed or measured in wells,. boreholes, and excavations – the type of free product recovery system used – whether there will be any on-site or off-site discharges during the recovery operation and where this discharge will be located – the type of treatment applied to, and the effluent quality exempted from, any discharge – the steps that have been or are being taken to obtain any required permits for any discharge – the disposition of the recovered free product. (NOTE: These requirements do not apply to excluded USTs under 40 CFR 280.10(b) or USTs exempted under the RCRA Subtitle C Section 3004(u) corrective action requirements.) (NOTE: A RCRA Subtitle C, Section 3004(u) UST is a UST containing a hazardous waste at a RCRA Subtitle C permitted facility. A release from such a UST would be handled as required under the RCRA permit's corrective action plan.)

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ST.380.7. When there is a confirmed release from petroleum or hazardous substance USTs, an investigation for soil and groundwater contamination is required to be performed (40 CFR 280.60 and 280.65).	Verify that an investigation of the release, the release site, and possibly affected surrounding areas has been done and identified if any of the following conditions exists: – evidence that groundwater wells have been affected by the release – free product is found to need recovery – evidence that contaminated soil is in contact with groundwater – the implementing agency requests an investigation based on the potential effects of contaminated soil or groundwater on nearby surface water and groundwater resources. Verify that the results of the investigation are submitted to the implementing agency as soon as practicable, or according to a time schedule defined by the implementing agency. (NOTE: These requirements do not apply to excluded USTs under 40 CFR 280.10(b) or USTs exempted under the RCRA Subtitle C Section 3004(u) corrective action requirements.) (NOTE: A RCRA Subtitle C, Section 3004(u) UST is a UST containing a hazardous waste at a RCRA Subtitle C permitted facility. A release from such a UST would be handled as required under the RCRA permit's corrective action plan.)

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ST.390 **OUT-OF-SERVICE UNDERGROUND STORAGE TANKS AND CLOSURE OF UNDERGROUND STORAGE TANKS**	
ST.390.1. USTs which are temporarily closed must have continued maintenance (40 CFR 280.10(c) and 280.70).	Determine if there are any temporarily closed USTs. Verify that proper operation and maintenance is being performed for the following: – corrosion protection in accordance with 40 CFR 280.31 (see checklist item ST.350.1) – release detection in accordance with 40 CFR 280.40 through 280.45 (see checklist items ST.370.1 through ST.370.3, ST.380.1, and ST.400.3). (NOTE: 40 CFR 280.50 through 280.53 (see checklist items ST.320.2, ST.380.1, and ST.380.2) and 40 CFR 280.60 through 280.67 (see checklist items ST.380.2 through ST.280.7, and ST.400.5) must be complied with if a release is suspected or confirmed.) (NOTE: If the UST is empty, release detection is not required.) (NOTE: An empty UST is one which has no more than 2.5 cm (1 in.) of residue or less than 0.3 percent by weight of total capacity of the UST system.) Verify that, if a UST system is temporarily closed for 3 mo or more, the vent lines are open and functioning and all other lines, pumps, manways, and ancillary equipment are capped and secured. Verify that, if the UST has been temporarily closed for more than 12 mo, the UST must be permanently closed if the UST does not meet the standards for a new UST in 40 CFR 280.20, or an upgraded UST in 40 CFR 280.21 (see checklist items ST.300.1 through ST.300.4) except that spill and overfill requirements do not have to be met. Verify that, if the UST has been temporarily closed for more than 12 mo and does not meet the standards for new or upgraded USTs, it is permanently closed at the end of this 12 mo period in accordance with 40 CFR 280.71 through 280.74 (see checklist items ST.390.1 through ST.390.6 and ST.400.4) unless the implementing agency has provided an extension of the 12 mo temporary closure period.

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	(NOTE: A site assessment has to be done before applying for an extension.) (NOTE: The following types of USTs are not subject to these requirements: – wastewater treatment tank systems – any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954 – any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A – airport hydrant fuel distribution systems – UST system with field-constructed tanks.)
ST.390.2. Notification must be given to the implementing agency for any permanent closure or change in service 30 days in advance or within a reasonable time frame as determined by the implementing agency (40 CFR 280.10(c) and 280.71(a)).	Determine if there are plans to permanently close or make a change in service to any USTs. Verify that the implementing agency was notified of intent to permanently closure or make the change-in-service at least 30 days, or within a reasonable time frame as determined by the implementing agency, before start of the activity unless the activity is in response to corrective action. Verify that the required assessment of the excavation zone is done after notifying the implementing agency but before completion of the permanent closure or change-in-service. (NOTE: The following types of USTs are not subject to these requirements: – wastewater treatment tank systems – any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954 – any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A – airport hydrant fuel distribution systems – UST system with field-constructed tanks.)
ST.390.3. UST closure must be done according to specific requirements (40 CFR 280.10(c) and 280.71(b)).	Verify that tanks being permanently closed are emptied and cleaned by removing all liquids and accumulated sludges. Verify that, if USTs have been, or are being, permanently closed, one of the following methods is used: – it is removed from the ground – it is left in place with the contents removed, and filled with an inert solid material.

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	Determine if there are any possible abandoned USTs, and if there are plans to close the UST in an appropriate manner. (NOTE: The following types of USTs are not subject to these requirements: – wastewater treatment tank systems – any UST systems containing radioactive material that are regulated under the Atomic Energy Act of 1954 – any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A – airport hydrant fuel distribution systems – UST system with field-constructed tanks.)
ST.390.4. Prior to a change-in-service, tanks must be emptied and cleaned and a site assessment conducted (40 CFR 280.10(c) and 280.71(c)).	(NOTE: Continued use of an UST system to store a non-regulated substances is considered a change-in-service.) Verify that, prior to the change, the tank was emptied and cleaned by removing all liquid and accumulated sludge. Verify that, prior to the change, a site assessment in accordance with 40 CFR 280.72 (see checklist item ST.390.5) was done. (NOTE: The following types of USTs are not subject to these requirements: – wastewater treatment tank systems – any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954 – any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A – airport hydrant fuel distribution systems – UST system with field-constructed tanks.)
ST.390.5. Prior to permanent closure or change in service, measurements must be made for the presence of a release where contamination is most likely to be present at the site (40 CFR 280.10(c) and 280.72).	Verify that prior to permanent closure or change in service, measurements for the presence of a release are done where contamination is most likely to be present at the UST site. Verify that in selecting sample types, sample locations, and measurement methods, owners and operators have considered the method of closure, the nature of the stored substances, the type of backfill, the depth to groundwater, and other appropriate factors for identifying the presence of a release. (NOTE: These requirements are met if one of the leak detection methods outlined in 40 CFR 280.43(e) (vapor monitoring) and 280.43(f) (groundwater monitoring)

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	(see Appendix C of this document) are in operation at the time of closure and there is no indication of release.) Verify that in the event contaminated soils, contaminated groundwater or free product is discovered, corrective action is undertaken in accordance with 40 CFR 280.60 through 280.67 (see checklist items ST.380.3 through 380.7). (NOTE: The following types of USTs are not subject to these requirements: – wastewater treatment tank systems – any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954 – any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A – airport hydrant fuel distribution systems – UST system with field-constructed tanks.)
ST.390.6. When directed by the implementing agency, the *excavation zone of UST* systems permanently closed prior to December 22, 1988 must be assessed and the UST closed according to current standards (40 CFR 280.10(c) and 280.73).	Determine if there are any USTs which were permanently closed prior to December 22, 1988. Verify that the excavation zone of these USTs has been assessed and cleanup done as needed when directed to do so by the implementing agency. (NOTE: The following types of USTs are not subject to these requirements: – wastewater treatment tank systems – any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954 – any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A – airport hydrant fuel distribution systems – UST system with field-constructed tanks.)

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ST.400 **UNDERGROUND STORAGE TANK DOCUMENTATION**	
ST.400.1. Notice must be given within 30 days when a UST system is brought into service after May 8, 1986. (40 CFR 280.10(c) and 280.22(a) through 280.22(f)).	Determine if any UST was brought into service after May 8, 1986. Verify that the appropriate notification was issued to the state or local agency or department designated to receive the notice. (NOTE: If a state requires use of a state form that differs from a U.S. EPA form 7530, a state form may be used for notification in lieu of a U.S. EPA form 7530 if the form meets the requirements of RCRA Section 9002. These notices must be sent to the appropriate agency. See Appendices I and II of 40 CFR 280 for details on the contents of the U.S. EPA forms.) Verify that owners and operators of new UST systems certify in the notification form compliance with the following: – installation of tanks and piping under 40 CFR 280.20(a) – cathodic protection or steel tanks and piping under 40 CFR 280.20(a) and (b) – financial responsibility under 40 CFR 280 Subpart H – release detection under 40 CFR 280.41 and 280.42. Verify that all owners of new USTs ensure that the installer certifies in the notification form that appropriate methods were used to install the tank and piping in compliance with the requirements of 40 CFR 280.20(d). (NOTE: The following types of USTs are not subject to these requirements: – wastewater treatment tank systems – any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954 – any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A – airport hydrant fuel distribution systems – UST system with field-constructed tanks.)

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ST.400.2. Specific reporting requirements are required to be met in relation to USTs (40 CFR 280.10(c) and 280.34(a)).	Verify that the following has been submitted to the implementing agency wher applicable: – notifications of new USTs, including certification of installation – release reports, including suspected releases, spills and overfills – planned or complete corrective actions, including: initial abatemen measures, initial site characterization, free product removal, investigation o soil and groundwater cleanup, and the corrective action plan – notice of permanent closure or change in service. (NOTE: The following types of USTs are not subject to these requirements: – wastewater treatment tank systems – any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954 – any UST system that is a part of an emergency generator system at nuclea power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A – airport hydrant fuel distribution systems – UST system with field-constructed tanks.)
ST.400.3. Specific recordkeeping requirements must be met in relation to USTs (40 CFR 280.10(c), 280.34(b), 280.34(c), 280.45, and 280.74).	Verify that records are kept of the following: – a corrosion expert's analysis of site corrosion potential if corrosion protection equipment is not used – documentation of operation of corrosion protection equipment – documentation of UST system repairs – recent compliance with release detection requirements – results of any site investigations at permanent closure – demonstration of compliance with closure requirements. Verify that records are available at one of the following: – at the UST site and immediately available for inspection – at a readily available alternative site and provided for inspection upon request. (NOTE: in relation to permanent closure records, owners and operators have the additional alternative of mailing closure records to the implementing agency i they cannot be kept at the site or an alternative site.) Verify that records relating to release detection are kept as follows: – all written performance claims pertaining to any release detection system used, and the manner in which these claims have been justified or tested b the equipment manufacturer or installer, for 5 yr, or another reasonable

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	period of time determined by the implementing agency, from the date of installation – the results of any sampling, testing, or monitoring for 1 yr, or another reasonable period of time determined by the implementing agency, except the tank tightness results conducted in accordance with 40 CFR 280.43(c) are kept until the next tank tightness test – written documentation of all calibration, maintenance, repair of release detection equipment permanently located on-site at least 1 yr after the servicing work is done, or another reasonable period of time determined by the implementing agency, – schedules of required calibration and maintenance provided by the release detection equipment manufacturer, for 5 yr after the date of installation. (NOTE: The following types of USTs are not subject to these requirements: – wastewater treatment tank systems – any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954 – any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A – airport hydrant fuel distribution systems – UST system with field-constructed tanks.)
ST.400.4. Records demonstrating compliance with closure requirements are required to be maintained (40 CFR 280.10(c) and 280.74).	Verify that records demonstrating compliance with closure requirements are maintained Verify that results of excavation zone assessments are maintained for at least 3 yr after completion of permanent closure or change-in-service in one of the following ways: – by the owners and operators who took the UST our of service – by the current owners and operators of the UST system site – by mailing the records to the implementing agency if they cannot be maintained at the closed facility. (NOTE: The following types of USTs are not subject to these requirements: – wastewater treatment tank systems – any UST systems containing radioactive material that are regulated under the *Atomic Energy Act* of 1954 – any UST system that is a part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR 50, Appendix A – airport hydrant fuel distribution systems – UST system with field-constructed tanks.)

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ST.400.5. In specific ituations, a facility will be equired to have a corrective ıction plan (40 CFR 280.66 ınd 280.67).	Determine if, after reviewing the information submitted for site characterization, free product removal, and soil/groundwater cleanup, the implementing agency has required the owner and operators to submit additional information or to develop and submit a corrective action plan for responding to contaminated soils and ground water. Verify that, if a plan is required, it is submitted according to a schedule and format established by the implementing agency. (NOTE: Alternatively, owners and operators may, after fulfilling the requirements for site characterization, free product removal, and soil/groundwater cleanup, choose to submit a corrective action plan for responding to contaminated soil and ground water.) Verify that the plan provides for adequate protection of human health and the environment as determined by the implementing agency. (NOTE: The implementing agency will approve the corrective action plan only after ensuring that implementation of the plan will adequately protect human health, safety, and the environment.) Verify that the approved plan is implemented, and the owners and operators monitor, evaluate, and report the results of implementing the plan in accordance with a schedule and in a format established by the implementing agency. (NOTE: Owners and operators may, in the interest of minimizing environmental contamination and promoting more effective cleanup, begin cleanup of soil and ground water before the corrective action plan is approved provided that they do all of the following: – notify the implementing agency of their intention to begin cleanup – comply with any conditions imposed by the implementing agency, including halting cleanup or mitigating adverse consequences from cleanup activities – incorporate these self-initiated cleanup measures in the corrective action plan that is submitted to the implementing agency for approval.) (NOTE: For each confirmed release that requires a corrective action plan, the implementing agency must provide notice to the public by means designed to reach those members of the public directly affected by the release and the planned corrective action. This notice may include, but is not limited to, public notice in local newspapers, block advertisements, public service announcements, publication in a state register, letters to individual households, or personal contacts by field staff. The implementing agency must ensure that site release information and decisions concerning the corrective action plan are made available to the public for inspection upon request.)

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ST.430 **UNDERGROUND STORAGE TANK FINANCIAL RESPONSIBILITY**	(NOTE: The financial responsibility requirements apply to owners and operators of all petroleum USTs except as otherwise provided below (40 CFR 280.90): – owners and operators of petroleum UST systems are subject to these requirements if they are in operation on or after the date for required compliance in 40 CFR 280.91 (All dates for required compliance have passed.) – State and federal government entities whose debts and liabilities are the debts and liabilities of a state or the United States are exempt from these requirements – these requirements do not apply to owners and operators of any excluded USTs or deferred USTs (see definitions) – if the owner and operator of a petroleum underground storage tank are separate persons, only one person is required to demonstrate financial responsibility; however, both parties are liable in event of noncompliance.)
ST.430.1. Owners or operators of petroleum USTs must demonstrate financial responsibility for taking corrective action and for compensating third parties for bodily injury and property damage caused by accidental releases arising from the operation of petroleum UST (40 CFR 280.93, 280.95, 280.100(a), 280.101(a), 280.113).	(NOTE: An owner or operator is no longer required to maintain financial responsibility for a UST after the tank has been properly closed or, if corrective action is required, after corrective action has been completed and the tank has been properly closed as required by 40 CFR 280, subpart G.) Verify that owners or operators of petroleum underground storage tanks demonstrate financial responsibility for taking corrective action and for compensating third parties for bodily injury and property damage caused by accidental releases arising from the operation of petroleum USTs in at least the following per-occurrence amounts: – for owners or operators of petroleum USTs located at petroleum marketing facilities, or that handle an average of more than 10,000 gal/mo of petroleum based on annual throughput for the previous calendar year; $1 million – for all other owners or operators of petroleum USTs; $500,000. Verify that owners or operators of petroleum USTs demonstrate financial responsibility for taking corrective action and for compensating third parties for bodily injury and property damage caused by accidental releases arising from the operation of petroleum USTs in at least the following annual aggregate amounts: – for owners or operators of 1 to 100 petroleum USTs, $1 million – for owners or operators of 101 or more petroleum USTs, $2 million (NOTE: In relation to the annual aggregate amounts, "petroleum UST" means a single containment unit and does not mean combinations of single containment units.)

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	Verify that, the amount of assurance provided by each mechanism or combination of mechanisms is in the full amount specified if the owner or operator uses separate mechanisms or separate combinations of mechanisms to demonstrate financial responsibility for: – taking corrective action – compensating third parties for bodily injury and property damage caused by sudden accidental releases – compensating third parties for bodily injury and property damage caused by nonsudden accidental releases. (NOTE: If an owner or operator uses separate mechanisms or separate combinations of mechanisms to demonstrate financial responsibility for different petroleum USTs, the annual aggregate required shall be based on the number of tanks covered by each such separate mechanism or combination of mechanisms.) Verify that owners or operators review the amount of aggregate assurance provided whenever additional petroleum USTs are acquired or installed. Verify that, if the number of petroleum USTs for which assurance must be provided exceeds 100, the owner or operator demonstrates financial responsibility in the amount of at least $2 million of annual aggregate assurance by the anniversary of the date on which the mechanism demonstrating financial responsibility became effective. Verify that, if assurance is being demonstrated by a combination of mechanisms, the owner or operator demonstrates financial responsibility in the amount of at least $2 million of annual aggregate assurance by the first-occurring effective date anniversary of any one of the mechanisms combined (other than a financial test or guarantee) to provide assurance. (NOTE: The amounts of assurance required under this section exclude legal defense costs. The required per-occurrence and annual aggregate coverage amounts do not in any way limit the liability of the owner or operator.) ((NOTE: For USTs located in a state that does not have an approved program, and where the state requires owners or operators of underground storage tanks to demonstrate financial responsibility for taking corrective action and/or for compensating third parties for bodily injury and property damage, an owner or operator may use a state-required financial mechanism to meet the demonstration of financial responsibility requirements if the U.S. EPA Regional Administrator determines that the state mechanism is at least equivalent to the federally-specified financial mechanisms,) (NOTE: An owner or operator may satisfy the requirements for demonstration of financial responsibility for USTs located in a state where U.S. EPA is

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	administering the requirements of this subpart that assures that monies will be available from a state fund or state assurance program to cover costs up to the specified limits or otherwise assures that such costs will be paid if the U.S. EPA Regional Administrator determines that the state's assurance is at least equivalent to the federally-specified financial mechanisms.)
ST.430.2. Certain mechanisms and combination of mechanisms can be used to demonstrate financial responsibility (40 CFR 280.94).	Verify that appropriate financial mechanisms, or combination of mechanisms are used to demonstrate compliance. (NOTE: An owner or operator, including a local government owner or operator, may use any one or combination of the mechanisms listed in 40 CFR 280.95 through 280.103 to demonstrate financial responsibility for one or more UST.) (NOTE: A local government owner or operator may use any one or combination of the mechanisms listed in 40 CFR 280.104 through 280.107 to demonstrate financial responsibility for one or more USTs.) Verify that, if an owner or operator uses a guarantee or surety bond to establish financial responsibility, the attorney general of the state in which the USTs are located has submitted a written statement to the implementing agency that a guarantee or surety bond appropriately executed is a legally valid and enforceable obligation in that state. Verify that, if an owner or operator uses self-insurance in combination with a guarantee for the purpose of meeting the requirements of the financial test, the financial statements of the owner or operator are not consolidated with the financial statements of the guarantor.
ST.430.3. When an owner or operator chooses to use a financial test to provide financial assurance, certain requirements must be met (40 CFR 280.95).	(NOTE: An owner or operator, and/or guarantor, may satisfy the requirements of 280.93 by passing a financial test. See Appendix D of this document for more details on the financial test.) Verify that, if an owner or operator using the test to provide financial assurance finds that he/she no longer meets the requirements of the financial test based on the year-end financial statements, the owner or operator obtains alternative coverage within 150 days of the end of the year for which financial statements have been prepared. (NOTE: If the owner or operator fails to obtain alternate assurance within 150 days of finding that he or she no longer meets the requirements of the financial test based on the year-end financial statements, or within 30 days of notification by the Director of the implementing agency that he or she no longer meets the requirements of the financial test, the owner or operator must notify the Director of such failure within 10 days.)

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ST.430.4. When using a guarantee to satisfy financial responsibility demonstration requirements, certain parameters must be met (40 CFR 280.96).	Verify that the guarantor is: – a firm that does one of the following: – possesses a controlling interest in the owner or operator – possesses a controlling interest in a firm that posses a controlling interest in the owner or operator – is controlled through stock ownership by a common parent firm that possesses a controlling interest in the owner or operator; or, – a firm engaged in a substantial business relationship with the owner or operator and issuing the guarantee as an act incident to that business relationship. Verify that, within 120 days of the close of each financial reporting year, the guarantor demonstrates that it meets the financial test criteria in 40 CFR 280.95 (see Appendix D of this document) based on year-end financial statements for the latest completed financial reporting year by completing the letter from the chief financial officer described in 40 CFR 280.95(d) and delivers the letter to the owner or operator. Verify that, if the guarantor fails to meet the requirements of the financial test at *the end of any financial reporting year, within 120 days of the end of that financial* reporting year the guarantor sends by certified mail, before cancellation or nonrenewal of the guarantee, notice to the owner or operator. Verify that, if the Director of the implementing agency notifies the guarantor that he no longer meets the requirements of the financial test, the guarantor notifies the owner or operator within 10 days of receiving such notification from the Director. (NOTE: The guarantee will terminate no less than 120 days after the date the owner or operator receives the notification, as evidenced by the return receipt. The owner or operator must obtain alternative coverage.) (NOTE: See 40 CFR 280.96(c) for the specific wording of the guarantee.) Verify that an owner or operator who uses a guarantee establishes a standby trust fund when the guarantee is obtained. (NOTE: Under the terms of the guarantee, all amounts paid by the guarantor under the guarantee will be deposited directly into the standby trust fund in accordance with instructions from the Director of the implementing agency. This standby trust fund must meet the requirements specified in 40 CFR 280.103.)

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ST.430.5. When using liability insurance to satisfy financial responsibility demonstration requirements, certain parameters must be met (40 CFR 280.97).	Verify that the liability insurance is obtained from a qualified insurer or risk retention group. (NOTE: Such insurance may be in the form of a separate insurance policy or an endorsement to an existing insurance policy.) Verify that each insurance policy is amended by an endorsement or evidenced by a certification of insurance. (NOTE: See 40 CFR 280.97(b)(1) and 280.97(b)(2) for the exact language required in the endorsement or certification.) Verify that each insurance policy is issued by an insurer or a risk retention group that, at a minimum, is licensed to transact the business of insurance or eligible to provide insurance as an excess or surplus lines insurer in one or more states.
ST.430.6. When using a surety bond to satisfy financial responsibility demonstration requirements, certain parameters must be met (40 CFR 280.98).	Verify that the surety company issuing the bond is among those listed as acceptable sureties on federal bonds in the latest Circular 570 of the U.S. Department of the Treasury. (NOTE: See the text of 40 CFR 280.98(b) for the exact wording of the surety bond.) Verify that, under the terms of the bond, the surety will become liable on the bond obligation when the owner or operator fails to perform as guaranteed by the bond. (NOTE: In all cases, the surety's liability is limited to the per-occurrence and annual aggregate penal sums.) Verify that, an owner or operator who uses a surety bond to satisfy the financial responsibility requirements, establishes a standby trust fund when the surety bond is acquired. (NOTE: Under the terms of the bond, all amounts paid by the surety under the bond will be deposited directly into the standby trust fund in accordance with instructions from the Director.)

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ST.430.7. When using an irrevocable standby letter of credit to satisfy financial responsibility demonstration requirements, certain parameters must be met (40 CFR 280.99).	Verify that the issuing institution is an entity that has the authority to issue letters of credit in each state where used and whose letter-of-credit operations are regulated and examined by a federal or state agency. (NOTE: See the text of 40 CFR 280.99(b) for exact wording of the irrevocable standby letter of credit.) Verify that an owner or operator who uses a letter of credit to satisfy the financial responsibility demonstration requirements also establishes a standby trust fund when the letter of credit is acquired. (NOTE: Under the terms of the letter of credit, all amounts paid pursuant to a draft by the Director of the implementing agency will be deposited by the issuing institution directly into the standby trust fund in accordance with instructions from the Director.) Verify that the letter of credit: – is irrevocable with a term specified by the issuing institution – provides that credit be automatically renewed for the same term as the original term, unless, at least 120 days before the current expiration date, the issuing institution notifies the owner or operator by certified mail of its decision not to renew the letter of credit. (NOTE: Under the terms of the letter of credit, the 120 days will begin on the date when the owner or operator receives the notice, as evidenced by the return receipt.)
ST.430.8. When using a trust fund to satisfy financial responsibility demonstration requirements, certain parameters must be met (40 CFR 280.102).	Verify that the trustee is an entity that has the authority to act as a trustee and whose trust operations are regulated and examined by a federal agency or an agency of the state in which the fund is established. Verify that the trust fund is accompanied by a formal certification of acknowledgment. (NOTE: See 40 CFR 280.103(b)(1) and 280.103(b)(2) for exact wording of the trust fund and the certification.) Verify that the trust fund, when established, is funded for the full required amount of coverage, or funded for part of the required amount of coverage and used in combination with other mechanisms that provide the remaining required coverage. (NOTE: If the value of the trust fund is greater than the required amount of coverage, the owner or operator may submit a written request to the Director of the implementing agency for release of the excess. If other acceptable financial

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	assurance is substituted for all or part of the trust fund, the owner or operator may submit a written request to the Director of the implementing agency for release of the excess within 60 days of receiving such a request from the owner or operator, the Director of the implementing agency will instruct the trustee to release to the owner or operator such funds as the Director specifies in writing.)
ST.430.9. When using a guarantee, a surety bond, or an irrevocable standby letter of credit to satisfy financial responsibility demonstration requirements, a standby trust fund must be established (40 CFR 280.103).	Verify that the trustee of the standby trust fund is an entity that has the authority to act as a trustee and whose trust operations are regulated and examined by a federal agency or an agency of the state in which the fund is established. (NOTE: See 40 CFR 280.103(b)(1) and 280.103(b)(2) for exact wording of the standby trust fund and the certification.) (NOTE: The Director of the implementing agency will instruct the trustee to refund the balance of the standby trust fund to the provider of financial assurance if the Director determines that no additional corrective action costs or third-party liability claims will occur as a result of a release covered by the financial assurance mechanism for which the standby trust fund was established.) (NOTE: An owner or operator may establish one trust fund as the depository mechanism for all funds.)
ST.430.10. A general purpose local government owner or operator and/or local government serving as a guarantor must satisfy the requirements for demonstrating financial responsibility according to specific requirements (40 CFR 280.104).	Verify that, when a general purpose local government owner or operator and/or local government serving as a guarantor satisfies the demonstration of financial responsibility requirements by having a currently outstanding issue or issues of general obligation bonds of $1 million or more, excluding refunded obligations, the bonds have a Moody's rating of Aaa, Aa, A, or Baa, or a Standard & Poor's rating of AAA, AA, A, or BBB. (NOTE: Where a local government has multiple outstanding issues, or where a local government's bonds are rated by both Moody's and Standard and Poor's, the lowest rating must be used to determine eligibility. Bonds that are backed by credit enhancement other than municipal bond insurance may not be considered in determining the amount of applicable bonds outstanding.) Verify that, if a local government owner or operator or local government serving as a guarantor is not a general-purpose local government and does not have the legal authority to issue general obligation bonds, they satisfy the demonstration of financial responsibility requirements by having a currently outstanding issue or issues of revenue bonds of $1 million or more, excluding refunded issues and by also having a Moody's rating of Aaa, A, A, or Baa, or a Standard & Poor's rating of AAA, AA, A, or BBB as the lowest rating for any rated revenue bond issued by the local government.

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	(NOTE: Where bonds are rated by both Moody's and Standard & Poor's, the lower rating for each bond must be used to determine eligibility. Bonds that are backed by credit enhancement may not be considered in determining the amount of applicable bonds outstanding.) Verify that the local government owner or operator and/or guarantor maintains a copy of its bond rating published within the last 12 mo by Moody's or Standard & Poor's. Verify that, in order to demonstrate that it meets the local government bond rating test, the chief financial officer of a general purpose local government owner or operator and/or guarantor signs a letter. (NOTE: The exact wording of the letter can be found in 40 CFR 280.104(d).) Verify that, in order to demonstrate that it meets the local government bond rating test, the chief financial officer of local government owner or operator and/or guarantor other than a general purpose government signs a letter. (NOTE: The exact wording of the letter can be found in 40 CFR 280.104(e).) (NOTE: The Director of the implementing agency may require reports of financial condition at any time from the local government owner or operator, and/or local government guarantor. If the Director finds, on the basis of such reports or other information, that the local government owner or operator, and/or guarantor, no longer meets the local government bond rating test requirements of 40 CFR 280.104, the local government owner or operator must obtain alternative coverage within 30 days after notification of such a finding.) Verify that, if a local government owner or operator using the bond rating test to provide financial assurance finds that it no longer meets the bond rating test requirements, the local government owner or operator obtains alternative coverage within 150 days of the change in status.
ST.430.11. When using a *local government financial* test to satisfy the requirements for demonstrating financial responsibility, certain parameters must be met (40 CFR 280.105).	(NOTE: To be eligible to use the financial test, the local government owner or *operator must have the ability and authority to assess and levy taxes or to freely* establish fees and charges.) Verify that the local government owner or operator has the following information available, as shown in the year-end financial statements for the latest completed fiscal year: – total revenues: Consists of the sum of general fund operating and non-operating revenues including net local taxes, licenses and permits, fines and forfeitures, revenues from use of money and property, charges for services,

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	investment earnings, sales (property, publications, etc.), intergovernmental revenues (restricted and unrestricted), and total revenues from all other governmental funds including enterprise, debt service, capital projects, and special revenues, but excluding revenues to funds held in a trust or agency capacity. For purposes of this test, the calculation of total revenues shall exclude all transfers between funds under the direct control of the local government using the financial test (interfund transfers), liquidation of investments, and issuance of debt. – total expenditures: Consists of the sum of general fund operating and non-operating expenditures including public safety, public utilities, transportation, public works, environmental protection, cultural and recreational, community development, revenue sharing, employee benefits and compensation, office management, planning and zoning, capital projects, interest payments on debt, payments for retirement of debt principal, and total expenditures from all other governmental funds including enterprise, debt service, capital projects, and special revenues. For purposes of this test, the calculation of total expenditures shall exclude all transfers between funds under the direct control of the local government using the financial test (interfund transfers). – local revenues: Consists of total revenues minus the sum of all transfers from other governmental entities, including all monies received from federal, state, or local government sources. – debt service: Consists of the sum of all interest and principal payments on all long-term credit obligations and all interest-bearing short-term credit obligations. Includes interest and principal payments on general obligation bonds, revenue bonds, notes, mortgages, judgments, and interest bearing warrants. Excludes payments on non-interest-bearing short-term obligations, interfund obligations, amounts owed in a trust or agency capacity, and advances and contingent loans from other governments. – total funds: Consists of the sum of cash and investment securities from all funds, including general, enterprise, debt service, capital projects, and special revenue funds, but excluding employee retirement funds, at the end of the local government's financial reporting year. Includes federal securities, federal agency securities, state and local government securities, and other securities such as bonds, notes and mortgages. For purposes of this test, the calculation of total funds shall exclude agency funds, private trust funds, accounts receivable, value of real property, and other non-security assets. – population: Consists of the number of people in the area served by the local government. (NOTE: The local government's year-end financial statements, if independently audited, cannot include an adverse auditor's opinion or a disclaimer of opinion. The local government cannot have outstanding issues of general obligation or revenue bonds that are rated as less than investment grade.) Verify that the local government owner or operator has a letter signed by the chief

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	financial officer within 120 days of the close of each financial reporting year, as defined by the twelve-month period for which financial statements used to support the financial test are prepared. (NOTE: See the text of 40 CFR 280.105(c) for the exact wording of the required letter.) (NOTE: If a local government owner or operator using the test to provide financial assurance finds that it no longer meets the requirements of the financial test based on the year-end financial statements, the owner or operator must obtain alternative coverage within 150 days of the end of the year for which financial statements have been prepared.) (NOTE: The Director of the implementing agency may require reports of financial condition at any time from the local government owner or operator. If the Director finds, on the basis of such reports or other information, that the local government owner or operator no longer meets the financial test requirements, the owner or operator must obtain alternate coverage within 30 days after notification of such a finding.) Verify that, within 10 days, the local government owner or operator notifies the Director if they fail to obtain alternate assurance: – within 150 days of finding that it no longer meets the requirements of the financial test based on the year-end financial statements – within 30 days of notification by the Director of the implementing agency that it no longer meets the requirements of the financial test.
ST.430.12. When the local government owner or operator uses a local government guarantee to satisfy the demonstration of financial responsibility requirements, certain parameters must be met (40 CFR 280.106).	Verify that the guarantor is either the state in which the local government owner or operator is located or a local government having a "substantial governmental relationship" with the owner and operator and issuing the guarantee as an act incident to that relationship. Verify that the local government acting as the guarantor does one of the following: – demonstrates that it meets the bond rating test requirement and delivers a copy of the chief financial officer's letter to the local government owner or operator – demonstrates that it meets the worksheet test requirements and delivers a copy of the chief financial officer's letter to the local government owner or operator – demonstrates that it meets the local government fund requirements and delivers a copy of the chief financial officer's letter to the local government owner or operator.

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	Verify that, if the local government guarantor is unable to demonstrate financial assurance at the end of the financial reporting year, the guarantor sends by certified mail, before cancellation or non-renewal of the guarantee, notice to the owner or operator. Verify that, the guarantee will terminate no less than 120 days after the date the owner or operator receives the notification, as evidenced by the return receipt. Verify that the owner or operator obtains alternative coverage as specified in 40 CFR 280.114(c) (see checklist item ST.430.17) if the local government guarantor is unable to demonstrate financial assurance at the end of the financial reporting year. (NOTE: See the text of 40 CFR 280.106(d) or 280.106(e) for exact wording of the guarantee agreement, depending on which guarantee arrangement is selected in 40 CFR 280.106(c).)
ST.430.13. When the local government owner or operator uses a dedicated fund account to satisfy the demonstration of financial responsibility requirements, certain parameters must be met (40 CFR 280.107).	Verify that a dedicated fund is not commingled with other funds or otherwise used in normal operations. Verify that a dedicated fund meets one of the following requirements: - the fund is dedicated by state constitutional provision, or local government statute, charter, ordinance, or order to pay for taking corrective action and for compensating third parties for bodily injury and property damage caused by accidental releases arising from the operation of petroleum USTs and is funded for the full amount of coverage required under 40 CFR 280.93, or funded for part of the required amount of coverage and used in combination with other mechanisms that provide the remaining coverage - the fund is dedicated by state constitutional provision, or local government statute, charter, ordinance, or order as a contingency fund for general emergencies, including taking corrective action and compensating third parties for bodily injury and property damage caused by accidental releases arising from the operation of petroleum USTs, and is funded for five times the full amount of coverage required under 40 CFR 280.93, or funded for part of the required amount of coverage and used in combination with other mechanisms that provide the remaining coverage (NOTE: If the fund is funded for less than five times the amount of coverage required under 40 CFR 280.93, the amount of financial responsibility demonstrated by the fund may not exceed one-fifth the amount in the fund.) - the fund is dedicated by state constitutional provision, or local government statute, charter, ordinance or order to pay for taking corrective action and for compensating third parties for bodily injury and property damage caused by accidental releases arising from the operation of petroleum USTs (NOTE: A payment is made to the fund once every year for 7 yr until the fund is fully-

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	funded. This 7 yr period is hereafter referred to as the "pay-in-period.") (NOTE: In addition to this payment, one of the following requirements must be met: – the local government owner or operator has available bonding authority for an amount equal to the difference between the required amount of coverage and the amount held in the dedicated fund, or – the local government owner or operator has a letter signed by the appropriate state attorney general stating that the use of bond authority will not increase the local government's debt beyond the legal debt ceiling established by the relevant state laws and that prior voter approval is not necessary.) (NOTE: See the text of 40 CFR 280.107(c) for the formula used to calculate the amount of payment to be made in the pay-in-period.) Verify that the chief financial officer of the local government owner or operator and/or guarantor signs a letter supporting the use of the local government fund mechanism. (NOTE: See 40 CFR 180.107(d) for the exact wording of this letter.)
ST.430.14. Substitution of alternate financial assurance mechanisms is acceptable if done according to specific provisions (40 CFR 280.108).	Verify that, if the owner or operator substitutes any alternate financial assurance mechanisms, an effective financial assurance mechanism or combination of mechanisms that satisfies the requirements of 40 CFR 280.93 is maintained at all times. (NOTE: After obtaining alternate financial assurance, an owner or operator may cancel a financial assurance mechanism by providing notice to the provider of financial assurance.)
ST.430.15. The cancellation or nonrenewal by a provider of financial assurance must meet specific requirements (40 CFR 280.109)	Verify that, if a provider of financial assurance cancels or fails to renew an assurance mechanism, the provider sends a notice of termination is sent by certified mail to the owner or operator. (NOTE: Termination of a local government guarantee, a guarantee, a surety bond, or a letter of credit may not occur until 120 days after the date on which the owner or operator receives the notice of termination, as evidenced by the return receipt.) (NOTE: Termination of insurance or risk retention coverage, except for non-payment or misrepresentation by the insured, or state-funded assurance may not occur until 60 days after the date on which the owner or operator receives the notice of termination, as evidenced by the return receipt. Termination for non-payment of premium or misrepresentation by the insured may not occur until a minimum of 10 days after the date on which the owner or operator receives the

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	notice of termination, as evidenced by the return receipt.) Verify that, if a provider of financial responsibility cancels or fails to renew for reasons other than incapacity of the provider, the owner or operator obtains alternate coverage within 60 days after receipt of the notice of termination. Verify that, if the owner or operator fails to obtain alternate coverage within 60 days after receipt of the notice of termination, the owner or operator notifies the Director of the implementing agency of such failure and submits all of the following: – the name and address of the provider of financial assurance – the effective date of termination – the evidence of the financial assistance mechanism subject to the termination.

ST.430.16. Owners or operators are required to meet reporting and recordkeeping requirements in relation to documentation of financial responsibility (40 CFR 280.110 and 280.111).	Verify that the owner or operator submits the forms documenting current evidence of financial responsibility to the Director of the implementing agency:
	
	– within 30 days after the owner or operator identifies a release from an UST **required to be reported under 40 CFR 280.53 or 40 CFR 280.61**
	– **if the owner or operator fails to obtain alternate coverage,** within 30 days **after the owner or operator receives notice of:**
	  – commencement of a voluntary or involuntary proceeding under Title 11 (Bankruptcy), U.S. Code, naming a provider of financial assurance as a debtor
	  – suspension or revocation of the authority of a provider of financial assurance to issue a financial assurance mechanism
	  – failure of a guarantor to meet the requirements of the financial test
	  – other incapacity of a provider of financial assurance
	– as required by 40 CFR 280.95(g) (see checklist item number ST.430.1) if an owner or operator using the test to provide financial assurance finds that he/she no longer meets the requirements of the financial test based on the year-end financial statements
	– as required 40 CFR 280.109(b) (see checklist item ST.430.15) if a provider of financial responsibility cancels or fails to renew for reasons other than incapacity of the provider.
	
	Verify that the owner or operator certifies compliance with the financial responsibility requirements in the new tank notification form when notifying the appropriate state or local agency of the installation of a new UST under 40 CFR 280.22 (see checklist item ST.400.1).
	
	Verify that owners or operators maintain evidence of all financial assurance mechanisms used to demonstrate financial responsibility for a UST until released from the requirements through tank closure and/or completion of corrective

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	actions.
	
	Verify that owners or operators maintain such evidence at the UST site or the owner's or operator's place of work.
	
	(NOTE: Records maintained off-site must be made available upon request of the implementing agency.)
	
	Verify that the following types of evidence of financial responsibility are maintained:
	
	– a copy of the instrument worded as specified when the owner or operator is using the financial test of self-insurance, a guarantee, insurance and risk retention group coverage, a surety bond, a letter of credit, a trust fund, local government bond rating test, local government financial test, local government guarantee, or local government fund
	– a copy of the chief financial officer's letter based on year-end financial statements for the most recent completed financial reporting year when using a financial test or guarantee, or a local government financial test or a local government guarantee supported by the local government financial test
	– a copy of the signed standby trust fund agreement and copies of any amendments to the agreement when the owner or operator is using a guarantee, surety bond, or letter of credit
	– a copy of the signed standby trust fund agreement and copies of any amendments to the agreement when a local government owner or operator is using a local government guarantee
	– a copy of its bond rating published within the last 12 mo by Moody's or Standard & Poor's when a local government owner or operator is using the local government bond rating test
	– a copy of the guarantor's bond rating published within the last 12 mo by Moody's or Standard & Poor's when a local government owner or operator is using the local government guarantee, where the guarantor's demonstration of financial responsibility relies on the bond rating test
	– a copy of the signed insurance policy or risk retention group coverage policy, with the endorsement or certificate of insurance and any amendments to the agreements when an owner or operator is using an insurance policy or risk retention group coverage
	– a copy of any evidence of coverage supplied by or required by the state when an owner or operator is covered by a state fund or other state assurance
	– copies of the following when an owner or operator is using a local government fund:
	  – a copy of the state constitutional provision or local government statute, **charter, ordinance, or order dedicating the fund**
	  – year-end financial statements for the most recent completed financial reporting year showing the amount in the fund
	  – if the fund is established using incremental funding backed by bonding

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	authority: the financial statements showing the previous year's balance, the amount of funding during the year, and the closing balance in the fund – if the fund is established using incremental funding backed by bonding authority: documentation of the required bonding authority, including either the results of a voter referendum, or attestation by the State Attorney General – a copy of the guarantor's year-end financial statements for the most recent completed financial reporting year showing the amount of the fund when the local government owner or operator is using the local government guarantee supported by the local government fund – an updated copy of a certification of financial responsibility when an owner or operator is using the financial test of self-insurance, a guarantee, insurance and risk retention group coverage, a surety bond, a letter of credit, a state-required mechanism, a state fund or other state assurance, a trust fund, a standby trust fund, local government bond rating test, local government financial test, local government financial test, local government guarantee, or local government fund. (NOTE: See 40 CFR 280.111(b)(1) for exact wording of the certification of financial responsibility.) Verify that the certification of financial responsibility is updated whenever the financial assurance mechanism used to demonstrate financial responsibility changes. Verify that the copies of the chief financial officer's letter based on year-end financial statements for the most recent completed financial reporting year when using a financial test or guarantee, or a local government financial test or a local government guarantee supported by the local government financial test are on file no later than 120 days after the close of the financial reporting year.
ST.430.17. When an owner or operator or provider of financial assurance undergoes bankruptcy or other incapacity, specific requirements must be met (40 CFR 280.114).	Verify that, within 10 days after commencement of a voluntary or involuntary proceeding under Title 11 (Bankruptcy), U.S. Code, naming an owner or operator as debtor, the owner or operator notifies the Director of the implementing agency by certified mail of such commencement and submits the appropriate forms documenting current financial responsibility. Verify that, within 10 days after commencement of a voluntary or involuntary proceeding under Title 11 (Bankruptcy), U.S. Code, naming a guarantor providing financial assurance as debtor, such guarantor notifies the owner or operator by certified mail of such commencement as required under the terms of the guarantee. Verify that, within 10 days after commencement of a voluntary or involuntary proceeding under Title 11 (Bankruptcy), U.S. Code, naming a local government

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	owner or operator as debtor, the local government owner or operator notifies the Director of the implementing agency by certified mail of such commencement and submit the appropriate forms documenting current financial responsibility. Verify that, within 10 days after commencement of a voluntary or involuntary proceeding under Title 11 (Bankruptcy), U.S. Code, naming a guarantor providing a local government financial assurance as debtor, such guarantor notifies the local government owner or operator by certified mail of such commencement as required under the terms of the guarantee. (NOTE: An owner or operator who obtains financial assurance by a mechanism other than the financial test of self-insurance will be deemed to be without the required financial assurance in the event of a bankruptcy or incapacity of its provider of financial assurance, or a suspension or revocation of the authority of the provider of financial assurance to issue a guarantee, insurance policy, risk retention group coverage policy, surety bond, letter of credit, or state-required mechanism.) Verify that the owner or operator obtains alternate financial assurance within 30 days after receiving notice of bankruptcy or incapacity. Verify that, if the owner or operator does not obtain alternate coverage within 30 days after such notification, he notifies the Director of the implementing agency. Verify that, within 30 days after receipt of notification that a state fund or other state assurance has become incapable of paying for assured corrective action or third-party compensation costs, the owner or operator obtains alternate financial assurance.
ST.430.18. When a standby trust is funded upon the instruction of the Director of the implementing agency with funds drawn from a guarantee, local government guarantee with standby trust, letter of credit, or surety bond, and the amount in the standby trust is reduced below the full amount of coverage required, certain actions are required (40 CFR 280.115).	Verify that, at any time after a standby trust is funded upon the instruction of the Director of the implementing agency with funds drawn from a guarantee, local government guarantee with standby trust, letter of credit, or surety bond, and the amount in the standby trust is reduced below the full amount of coverage required, the owner or operator, by the anniversary date of the financial mechanism from which the funds were drawn, does one of the following: – replenishes the value of financial assurance to equal the full amount of **coverage required** – **acquires another financial assurance mechanism** for the amount by which funds in the standby trust have been reduced (NOTE: The full amount of coverage required is the amount of coverage to be provided by 40 CFR 280.93. If a combination of mechanisms was used to provide the assurance funds which were drawn upon, replenishment shall occur by the earliest anniversary date among the mechanisms.)

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HAZARDOUS WASTE STORAGE TANKS **ST.500** **Small Quantity Generators (SQGs)**	

ST.500.1. SQGs accumulating hazardous waste on-site in tanks must comply with certain tank requirements (40 CFR 262.34(d)(3) and 265.201(a) through 265.201(c)).	Verify that:
	
	– when used to treat or store ignitable or reactive wastes, the tank prevents:
	  – generation of extreme heat or pressure, fire or explosions, or violent reactions
	  – production of uncontrolled toxic mists, fumes, dusts, or gases in quantities that would threaten human health or the environment
	  – production of uncontrolled flammable fumes or gases in quantities that would pose a risk of fire or explosion
	  – damage to structural integrity of the device or facility
	  – threats to human health or the environment through other means
	– no treatment reagent or hazardous wastes are placed in the tank that would cause it to rupture, leak, corrode, or otherwise fail before the end of its intended life
	– uncovered tanks have at least 60 cm (2 ft) of freeboard unless the tank has a containment structure, drainage control system, or a diversion structure with a volume that equals or exceeds the capacity of the top 60 cm (2 ft) of the tank
	– continuous feed tanks have a wastefeed cutoff or other stop/bypass system.
	
	Verify that the following are inspected at the indicated times:
	
	– discharge control equipment at least once each operating day
	– monitoring equipment (pressure and temperature gauges) at least once each operating day
	– waste level in tank at least once each operating day
	– construction material of the tank for corrosion or leakage weekly
	– surrounding area for erosion, leakage and/or contamination at least weekly.
	
	(NOTE: Both small quantity and large quantity generators that accumulate hazardous waste in tanks must also comply with other requirements specified under 40 CFR 262. Auditors should pay particular attention to the requirements under 40 CFR 262.34(a)(2), (a)(3), and (a)(4). These requirements and related audit guidance are further outlined in separate U.S. EPA audit protocols titled: *Protocol for Conducting Environmental Compliance Audits of Hazardous Waste Generators under RCRA* (U.S. EPA Document No. EPA-305-B-98-005) and *Protocol for Conducting Environmental Compliance Audits of TSDFs under*

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	RCRA (U.S. EPA Document No. EPA-305-B-006.)
ST.500.2. Tank systems at SQGs must comply with requirements for ignitable, reactive, or incompatible wastes (40 CFR 262.34(d)(3) and 265.201(e) through 265.201(f)).	Verify that ignitable or reactive wastes are not placed in a tank system unless one of the following is done: – the waste is treated, rendered, or mixed before or immediately after placement in the tank system so that it is no longer reactive or ignitable and the minimum requirements for reactive and ignitable wastes are met – the waste is treated or stored in such a way that it is protected from any material or conditions that may cause the waste to ignite or react – the tank system is used solely for emergencies. Verify that the minimum protective distances between waste management areas and any public ways, streets, alleys, or an adjoining property line that can be built upon as required in Tables 2-1 through 2-6 of the National Fire Protection Association's (NFPA's) *Flammable and Combustible Liquids Code* are maintained. Verify that incompatible waste, or incompatible wastes and materials, are not placed in the same tank system unless minimum safety requirements are met. Verify that hazardous waste is not placed in a tank system that has not been decontaminated and that previously held an incompatible waste or material unless mini mum safety requirements are met.
ST.500.3. SQGs must comply with specific tank closure requirements (40 CFR 265.201(d)).	Verify that tank systems in the process of being closed or closed had all hazardous waste removed from tanks, discharge control equipment, and discharge confinement structures.

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HAZARDOUS WASTE TANKS **ST.540** **Large Quantity Generators**	(NOTE: See Appendix E of this document for guidance on the schedule for implementation of air emissions standards in 40 CFR 265.1080 through 265.1091. Also, in relation to the requirements for air emissions standard, see the definition of Exempted Hazardous Waste Management Units.)
ST.540.1. Secondary containment is required for specific types of tank systems used to accumulate or treat hazardous waste by large quantity hazardous waste generators (40 CFR 262.34(a)(1)(ii), 265.190(a), 265.190(b), and 265.193(a)).	Verify that tanks that accumulate or treat material that becomes hazardous waste have secondary containment as follows: – for all new tank systems or components, prior to their being put into service – for those existing tank systems of known and documentable age, within 2 yr after January 12, 1987, or when the tank systems have reached 15 yr of age, whichever comes later – for those existing tank systems for which the age cannot be documented, within 8 yr of January 12, 1987; but if the age of the facility is greater then 7 yr by the time the facility reaches 15 yr of age or within 2 yr of January 12, 1987, whichever comes later. (NOTE: The following are exempt from these requirements: – tank systems that are used to store or treat hazardous waste which contains no free liquids that are situated inside a building with an impermeable floor – tank systems, including sumps, that serve as part of a secondary containment system to collect or contain releases of hazardous wastes.) (NOTE: Both small quantity and large quantity generators that accumulate hazardous waste in tanks must also comply with other requirements specified under 40 CFR 262. Auditors should pay particular attention to the requirements under 40 CFR 262.34(a)(2), 262.34(a)(3), and 262.34 (a)(4). These requirements and related audit guidance are further outlined in separate U.S. EPA audit protocols titled: *Protocol for Conducting Environmental Compliance Audits of Hazardous Waste Generators under RCRA* (U.S. EPA Document No. EPA-305-B-98-005) and *Protocol for Conducting Environmental Compliance Audits of TSDFs under RCRA* (U.S. EPA Document No. EPA-305-B-006.)
ST.540.2. Secondary containment on tank systems used by large quantity hazardous waste generators must meet specific requirements (40 CFR 262.34(a)(1)(ii), 265.190(a), and 265.193(b) through 265.193(d)).	Verify that secondary containment meets the following criteria: – it is designed, installed, and operated to prevent the migration of liquid out of the system – it is capable of detecting and collecting releases and accumulated liquids until removal – it is constructed of or lined with materials compatible with the wastes – it is strong enough and of sufficient thickness to prevent failure due to pressure gradients, climatic conditions, stress of installation and daily operation

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	– it is placed on a foundation or base that can provide appropriate support and prevent failure due to settlement, compression, or upset – a leak-detection system is present that is designed and operated to detect the failure of either the primary or secondary containment structure or the release of any hazardous waste within 24 h or the earliest practicable time – it is sloped or designed to drain and remove liquids from leaks, spills, or precipitation. Verify that spilled or leaked wastes are removed from secondary containment within 24 h or as timely as possible. Verify that secondary containment for tanks includes one or more of the following: – a liner (external to the tank) – a vault – a double-walled tank – an equivalent approved device. (NOTE: Tank systems that are used to accumulate or treat hazardous waste that contains no free liquids and are situated inside a building with an impermeable floor are exempt from these requirements.)
ST.540.3. External liners, vaults, and double-walled tanks used by large quantity generators are required to meet specific standards (40 CFR 262.34(a)(1)(ii), 265.190(a), and 265.193(e)).	Verify that external liner systems meet the following requirements: – they are designed and operated so that 100 percent of the capacity of the largest tank within the boundary would be contained – they prevent run-on and infiltration of precipitation into the secondary containment unless the collection system has sufficient capacity to handle run-on or infiltration – it is free of cracks or gaps – it surrounds the tank completely and covers all surrounding earth likely to come into contact with the waste if there is a release – capacity is sufficient to contain precipitation from a 25-yr, 24-h rainfall event. Verify that vault systems meet the following criteria: – it will contain 100 percent of the capacity of the largest tank within its boundary – it prevents run-on and infiltration of precipitation unless there is sufficient excess capacity, including capacity to contain precipitation from a 25-yr, 24-h rainfall event – it is constructed with chemical-resistant water stops at all joints – it has an impermeable interior coating that is compatible with the wastes it contains

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	– has a means to protect against the formation and ignition of vapors within the vault if the waste is ignitable or reactive – it has an exterior moisture barrier or otherwise operated to prevent migration of moisture into the vault. Verify that double-walled tanks meet the following criteria: – it is designed as an integral structure so that any release is contained by the outer shell – it is protected from both corrosion of the primary tank and the external surface of the outer shell if constructed of metal – it has a built-in continuous leak detection system capable of detecting a release within 24 h. (NOTE: Tank systems that are used to store or treat hazardous waste that contains no free liquids and are situated inside a building with an impermeable floor are exempt from these requirements.)
ST.540.4. Tank ancillary equipment used by large quantity hazardous waste generators must also be provided with secondary containment (40 CFR 262.34(a)(1)(ii), 265.190(a), and 265.193(f)).	Verify that ancillary equipment, except for the following, has secondary containment: – aboveground piping that is visually inspected for leaks on a daily basis – welded flanges, welded joints, and welded connections that are visually inspected for leaks on a daily basis – sealless or magnetic coupling pumps and sealless valves, that are visually inspected for leaks on a daily basis – pressurized aboveground piping systems with automatic shutoff valves that are visually inspected for leaks on a daily basis. (NOTE: Tank systems that are used to store or treat hazardous waste that contains no free liquids and are situated inside a building with an impermeable floor are exempt from these requirements.)
ST.540.5. Existing tank systems that do not have secondary containment are required to meet specific requirements 40 CFR 262.34(a)(1)(ii), 265.190(a), 265.191(a) through 265.191(c), and 265.193(i)).	Verify that existing tank systems without secondary containment meet the following: – for nonenterable underground tanks, a leak test is conducted annually – for other than nonenterable underground tanks, either a leak test is done annually, or an annual schedule and procedure is developed for an assessment of the overall condition by an independent, qualified, registered, professional engineer. Verify that a record is maintained of the results of testing and assessments

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	Verify that tank systems which store or treat materials that become hazardous waste after July 14, 1986 are assessed within 12 mo after the waste becomes hazardous. (NOTE: Tank systems that are used to store or treat hazardous waste that contains no free liquids and are situated inside a building with an impermeable floor are exempt from these requirements.)
ST.540.6. Large quantity generators with new tank systems must submit to the U.S. EPA Regional Administrator or the authorized regulatory agency a written assessment review certified by an independent, qualified, registered professional engineer to certify that the tank was installed according to specific standards (40 CFR 262.34(a)(1)(ii) and 265.192).	Determine if there are any new tank systems. Verify that, when the tanks are installed they are handled so as to prevent damage to the tank and any backfill material that is used is a noncorrosive, porous, homogeneous substance. Verify that ancillary equipment is supported and protected against damage and stress. Verify that the written assessments from the individuals required to certify the tank and supervise the installation of the tank is kept on file.
ST.540.7. Tanks used for hazardous waste treatment or accumulation by large quantity generators must follow certain operating requirements (40 CFR 262.34(a)(1)(ii) and 265.194).	Verify that hazardous wastes or treatment reagents are not placed in tanks if they could cause the tank system (including ancillary equipment, or containment system) to fail. Verify that appropriate measures are taken to prevent overfill, including: – spill prevention controls – overfill prevention controls – maintenance of sufficient freeboard to prevent overtopping by wave, wind action or precipitation for uncovered tanks.

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ST.540.8. Tank systems used by large quantity generators must comply with requirements for ignitable, reactive, or incompatible wastes (40 CFR 262.34(a)(1)(ii), 265.198, and 265.199).	Verify that ignitable or reactive wastes are not placed in a tank system, unless one of the following is met: – the waste is treated, rendered, or mixed before or immediately after placement in the tank system so that it is no longer reactive or ignitable and the minimum requirements for reactive and ignitable wastes are met – the waste is treated or stored in such a way that it is protected from any material or conditions that may cause the waste to ignite or react – the tank system is used solely for emergencies. Verify that the minimum protective distances between waste management areas and any public ways, streets, alleys, or an adjoining property line that can be built upon as required in Tables 2-1 through 2-6 of the NFPA's *Flammable and Combustible Liquids Code* are maintained. Verify that incompatible waste, or incompatible wastes and materials, are not placed in the same tank system unless minimum safety requirements are met. Verify that hazardous waste is not placed in a tank system that has not been decontaminated and that previously held an incompatible waste or material unless mini mum safety requirements are met.
ST.540.9. Large quantity generators must conduct inspections of tank systems and associated equipment (40 CFR 262.34(a)(1)(ii) and 265.195).	Verify that a schedule and procedure have been developed and are followed to inspect overfill controls. Determine if the following inspections are conducted at least once a day: – overfill/spill control equipment facilities to ensure it is in good working order – aboveground portions of the tank to detect corrosion or releases – data gathered from tank monitoring equipment and leak detection equipment (e.g., pressure and temperature gauges and monitoring wells) – construction materials and the area surrounding tank including the secondary containment system for signs of erosion or leakage (wet spots, dead vegetation). Verify that the proper operation of cathodic protection systems are inspected within 6 mo after initial installation and annually thereafter. Verify that all sources of impressed current are inspected and/or tested every other month. Verify that inspections are documented.

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ST.540.10. Tank systems or secondary containment systems used by large quantity generators from which there has been a leak or spill or which have been declared unfit for use must be removed from service immediately and meet specific requirements (40 CFR 262.34(a)(1)(ii) and 265.196).	Verify that the following steps are taken:
	
	– the flow or addition of hazardous wastes to the tank is stopped
	– the hazardous waste is removed from the tank:
	  – within 24 h of leak detection (or at the earliest practicable time as demonstrated by the owner/operator) remove as much waste form the tank as necessary to prevent further release and allow inspection and repair
	  – within 24 h (or in as timely a manner as is possible to prevent harm to human health and the environment) remove waste released to secondary containment system
	– a visual inspection of the release is done and:
	  – action is taken to prevent further migration to soils or surface or ground water
	  – visible contamination of soil and surface water is removed and disposed.
	
	Verify that notification is made within 24 h for any release to the environment to the regional administrator except for releases of 0.45 kg (1 lb) or less that are immediately contained and cleaned up.
	
	Verify that a report is submitted within 30 days containing the following information:
	
	– likely route of migration
	– characteristics of the surrounding soil
	– results of any monitoring or sampling
	– proximity to downgradient drinking water, surface water, and population areas
	– description of response actions taken or planned.
	
	Verify that the tank and/or secondary containment is repaired prior to its return to service and that extensive repairs are certified by an independent, qualified, registered, professional engineer.
	
	Verify that, when the release was from a component that was without secondary containment, secondary containment features were installed before the tank was returned to service.
	
	Verify that, if leaking components are replaced, the replacement complies with the relevant requirements for new tank systems.
	
	(NOTE: Reports of hazardous waste releases made pursuant to 40 CFR 302 will satisfy the reporting requirements of this part.)

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ST.540.11. Large quantity hazardous waste generators are required to follow specific procedures when closing a tank system (40 CFR 262.34(a)(1)(ii), 265.197(a), and 265.197(b)).	Determine if any tank systems have been closed. Verify that all waste residues, contaminated containment system components, contaminated soils, and structures and equipment contaminated with waste have been removed or decontaminated. Verify that, if it is not possible and/or practicable to remove or decontaminate all soils, the tank is closed and postclosure care performed as required for landfills.

ST.540.12. Certain tanks used for the accumulation of hazardous waste are required to meet Level 1 control standards for air emissions control (40 CFR 262.34(a)(1)(ii), 265.202, and 265.1085(a) through 265.1085(c)(3).	(NOTE: See the definition of *Exempted Waste Management Unit* and *Exempted Hazardous Waste Storage Tanks* for exemptions to these requirements.)
	
	Verify that the following tanks meet the requirements for Tank Level 1 controls:
	
	– the hazardous waste in the tank has a maximum organic vapor pressure which is less than the maximum organic vapor pressure for the tank's design capacity category as follows:
	  – for a tank design capacity equal to or greater than 151 m^3, the maximum organic vapor pressure limit for the tank is 5.2 kPa
	  – for a tank design capacity equal to or greater than 75 m^3 but less than 151 m^3, the maximum organic vapor pressure limits for the tank is 27.6 kPa
	  – for a tank design capacity less than 75 m^3, the maximum organic vapor pressure limit for the tank is 76.6 kPa
	– the hazardous waste in the tank is not heated to a temperature that is greater than the temperature at which the maximum organic vapor pressure of the hazardous waste is determined
	– the hazardous waste in the tank is not treated using a waste stabilization process.
	
	Verify that tanks not required to meet the requirements for Level 1 controls meet the requirements for Level 2 controls.
	
	Verify that, when required, the following Level 1 controls are met:
	
	– the maximum organic vapor pressure for a hazardous waste is determined before the first time the waste is placed in the tank
	– new maximum organic vapor pressure determinations are made each time there are changes to the hazardous waste which could cause the maximum organic vapor pressure to increase to a level that is equal to or greater than the maximum organic vapor pressure limit for the tank capacity.
	
	Verify that tanks requiring Level 1 control are equipped with a fixed roof designed as follows:

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	– the roof and its closure devices are designed to form a continuous barrie over the entire surface area of the hazardous waste in the tank
	– the fixed roof is installed so that there are no visible cracks, holes, gaps, o other open spaces between roof section joints or between the interface of th roof edge and the tank wall
	– each opening in the fixed roof, and any manifold system associated with th fixed roof, meets one of the following:
	  – it is equipped with a closure device designed to operate so that whe the closure device is secured in the closed position there are no visibl cracks, holes, gaps, or other open spaces in the closure device o between the perimeter of the opening and the closure device
	  – connected by a closed vent system that is vented to a control devic which removes or destroys organics in the vent stream and operate whenever hazardous waste is managed in the tank except during period when access is necessary
	– the fixed roof and closure devices are made of suitable materials tha minimize exposure of the hazardous waste to the atmosphere to the exten practical and maintain the integrity of the fixed roof and closure device throughout their intended service life.
	
	Verify that, for tanks requiring Level 1 control, whenever hazardous waste is in th tank, a fixed roof is installed with each closure device secured in the close position except as follows:
	
	– opening of the closure devices or removal of the fixed roof is allowed i order to:
	  – provide access to the tank for performing routine inspections maintenance, or other activities needed for normal operations
	  – remove accumulated sludge or other residues at the bottom of the tank
	– opening of spring loaded pressure vacuum relief valves, conservation vent, o similar type of pressure relief devices is allowed during normal operations i order to maintain the tanks internal pressure in accordance with desig standards
	– opening of a safety device in order to avoid unsafe conditions.

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ST.540.13. Certain tanks are required to use Level 2 control standards for air emissions control (40 CFR 262.34(a)(1)(ii), 265.202, 265.1085(b)(2), 265.1085(d) through 265.1085(e)(2), 265.1085(f)(1) and 265.1085(f)(2), 265.1085(g)(1), 265.1085(g)(2), 265.1085(h), and 265.1085(i)(1) through 265.1085(i)(3)).	(NOTE: See the definition of *Exempted Waste Management Unit* and *Exempted Hazardous Waste Storage Tanks* for exemptions to these requirements.)
	
	Verify that tanks not required to meet the requirements for Level 1 controls meet the requirements for Level 2 controls.
	
	Verify that, when using Level 2 controls, the following types of tanks are used:
	
	– a fixed roof tank equipped with an internal floating roof
	– a tank equipped with an external floating roof
	– a tank vented through a closed vent system to a control device
	– a pressure tank
	– a tank located inside an enclosure that is vented through a closed vent system to an enclosed combustion control device.
	
	Verify that, when a fixed roof with an internal floating roof is used, the following requirements are met:
	
	– the internal floating roof is designed to float on the liquid surface except when the floating roof is supported by the leg supports
	– the internal floating roof is equipped with a continuous seal between the wall of the tank and the floating roof edge that meets one of the following requirements:
	  – a single continuous seal that is either a liquid mounted seal or a metallic shoe seal
	  – two continuous seals mounted one above the other
	– the internal floating roof meets the following specifications:
	  – each opening in a noncontact internal floating roof, except for automatic bleeder vents and rim space vents, provides a projection below the liquid surface
	  – each opening in the internal floating roof is equipped with a gasketed cover or a gasketed lid except for leg sleeves, automatic bleeder vents, rim space vents, column wells, ladder wells, sample wells, and stub drains
	  – each penetration of the internal floating roof for sampling has a slit fabric cover that covers at least 90 percent of the opening
	  – each automatic bleeder vent and rim space vent is gasketed
	  – each penetration of the internal floating roof that allows for passage of a ladder has a gasketed sliding cover
	  – each penetration of the internal floating roof that allows for passage of a column supporting the fixed roof has a flexible fabric sleeve seal or a gasketed sliding cover
	– the tank is operated such that, when the floating roof is resting on the leg supports, the process of filling, emptying, or refilling is continuous and is completed as soon as practical
	– automatic bleeder vents are set at "closed" at all times when the roof is

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	floating, except when the roof is being floated off or is being landed on the leg supports
	– before filling the tank, each cover, access hatch, gauge float well, or lid on any opening in their internal floating roof is bolted or fastened closed
	– rim space vents are set to "open" only when the internal floating roof is not floating or when the pressure beneath the rim exceeds recommended settings.
	
	Verify that, when an external floating roof is used to control air emissions, the following requirements are met:
	
	– the external floating roof is designed to float on the liquid surface except when the floating roof is supported by leg supports
	– the floating roof is equipped with two continuous seals, one above the other, between the wall of the tank and the roof edge
	– the primary seal is a liquid mounted seal or a metallic shoe seal and the total area of the gaps between the tank wall and the primary seal do not exceed 21.2 cm^2/m of tank diameter and the width of any portion of these gaps does not exceed 3.8 cm
	– if a metallic shoe seal is used for the primary seal, it is designed so that one end extends into the liquid in the tank and the other end extends a vertical distance of at least 61 cm above the liquid surface
	– the secondary seal is mounted above the primary seal and covers the annular space between the floating roof and the wall of the tank, and the total area of the gaps between the tank wall and the secondary seal do not exceed 21.2 cm^2/m of tank diameter, and the width of any portion of these gaps does not exceed 1.3 cm
	– the external floating roof meets the following:
	  – each opening in a noncontact external floating roof provides a projection below the liquid surface except for automatic bleeder vents and rim space vents
	  – each opening is equipped with a gasketed cover, seal, or lid except for automatic bleeder vents, rim space vents, roof drains, and leg sleeves
	  – each access hatch and each gauge float is equipped with a cover designed to be bolted or fastened when the cover is secured in the closed position
	  – each automatic bleeder vent and each rim space vent is equipped with a gasket
	  – each roof drain that empties into the liquid managed in the tank is equipped with a slotted membrane fabric cover that covers at least 90 percent of the area of the opening
	  – each unslotted and slotted guide pole well is equipped with a gasketed sliding cover or a flexible fabric sleeve seal
	  – each unslotted guide pole is equipped with a gasketed cap on the end of the pole
	  – each slotted guide pole is equipped with a gasketed float or other device to close off the liquid surface from the atmosphere

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	– each gauge hatch and sample well is equipped with a gasketed cover
	
	Verify that, when an external floating roof is used, the tank is operated as follows:
	
	– when the floating roof is resting on the leg supports, the process of filling, emptying, or refilling is continuous and completed as soon as practical
	– each opening in the roof, except for automatic bleeder vents, rim space vents, roof drains, and leg sleeves, is secured and maintained in a closed position at all times except when the closure device is opened for access
	– covers on each access hatch and each gauge float well are bolted or fastened when secured in the closed position
	– automatic bleeder vents are set at "closed" at all times when the roof is floating except when the roof is being floated off or is being landed on the leg supports
	– rim space vents are set to "open" only at those times that the roof is being floated off the roof leg supports or when the pressure beneath the rim seal exceeds the manufacturer's setting
	– the cap on the end of each unslotted guide pole is secured in the closed position at all times except when measuring the level or collecting samples of the liquid in the tank
	– the cover on each gauge hatch or sample well is secured in the closed position at all times except when the hatch or well must be opened for access
	– both the primary seal and the secondary seal completely cover the annular space between the external floating roof and the wall of the tank in a continuous fashion except during inspection.
	
	Verify that, when air emissions are controlled from a tank by venting the tank to a control device, the following requirements are met:
	
	– the tank is covered by a fixed roof and vented directly through a closed vent system to a control device as follows:
	  – the fixed roof and its closure devices form a continuous barrier over the entire surface area of the liquid in the tank
	  – each opening in the fixed roof not vented to a control device is equipped with a closure device
	  – the fixed roof and the closure devices are made of suitable materials to minimize exposure of the hazardous waste to the atmosphere, and maintain the integrity of the fixed roof and closure devices throughout their intended service life
	  – the closed vent system is designed according to the requirements in 40 CFR 265.1088
	– whenever a hazardous waste is in the tank, the fixed roof is installed with each closure device secured in the closed position and the vapor headspace underneath the fixed roof is vented to the control device except as follows:
	  – *to provide access to the tank for performing routine inspection,* maintenance, or other activities needed for normal operations.

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	– to remove accumulated sludge or other residues from the bottom of the tank – opening of safety devices to avoid an unsafe condition. Verify that, when a pressure tank is used to control emissions, the following requirements are met: – the tank is designed not to vent to the atmosphere as a result of compression of the vapor headspace in the tank during the filling of the tank to capacity – all tank openings are equipped with closure devices designed to operate with no detectable organic emissions – whenever a hazardous waste is in the tank, it is operated as a closed system that does not vent to the atmosphere except when a safety device is opened to avoid an unsafe condition or when purging inerts from the tank is required and the purge stream is routed to a closed-vent system and there is an appropriate control device. Verify that, if air emissions are being controlled by using an enclosure vented through a closed vent system to an enclosed combustion control device, the following are met: – the tank is located inside an enclosure designed and operated according to the criteria for a permanent total enclosure as specified in 40 CFR 52.741, Appendix B – the enclosure is vented through a closed vent system to an enclosed, combustion control device that is designed and operated according to the standards in 40 CFR 265.1088.

ST.540.14. Closed vent systems are required to be designed according to specific standards (40 CFR 262.34(a)(1)(ii), 265.202, and 265.1088).	NOTE: See the definition of Exempted Waste Management Unit for exemptions o these requirements.)
	
	Verify that closed vent systems:
	
	– route the gases, vapors, and fumes emitted from the hazardous waste to a control device
	– are designed according to 40 CFR 265.1033(j)
	– meet the following if they contain bypass devices, except for low leg drains, high point bleeds, analyzer vents, open ended valves or lines, spring loaded pressure relief valves, and other fittings used for safety devices, that could be used to divert the gas or vapor stream before entering the control device:
	  – it is equipped with a flow indicator installed at the inlet to the bypass line used to divert gases and vapors from the closed vent system to the atmosphere at a point upstream of the control device inlet
	  – it is equipped with a seal or locking device placed on the mechanism by which the bypass device is in the closed position so that the bypass

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	device cannot be opened without breaking the seal or removing the lock
	– seals or closure mechanism are inspected at least once a month.
	
	Verify that the control device is one of the following:
	
	– a control device designed and operated to reduce the total organic content of the inlet vapor stream vented to the control device by at least 95 percent weight
	– an enclosed combustion device
	– a flare.
	
	Verify that, when using a closed vent system and control device, periods of planned routine maintenance to the control device during which the control device does not meet specifications do not exceed 240 h/yr.
	
	Verify that the following are met when using a carbon adsorption system:
	
	– all activated carbon in the control device is replaced on a regular basis after start-up if carbon adsorption is used
	– all carbon that is a hazardous waste and that is removed from the control device is managed according to 40 CFR 265.1033(m) regardless of the average volatile organic concentration
	– operation and maintenance is done in accordance with 40 CFR 265.1033(j) or 40 CFR 265.1033(j) if a control device is used other than a thermal vapor incinerator, flare, boiler, process heater, condenser, or carbon adsorption system
	– achievement of control device performance requirements is done by a performance test or design analysis for each control device except for the following:
	  – a flare
	  – a boiler or process heater with a design heat input capacity of 44 MW or greater
	  – a boiler or process heater into which the vent stream is introduced with the primary fuel
	  – a boiler or industrial furnace burning hazardous waste for which a final permit has been issued and the unit is designed and operated in accordance with 40 CFR 266
	  – a boiler or process heater for which the owner/operator has certified compliance
	– carbon adsorption systems demonstrate achievement of performance requirements based on the total quantity of organics vented to the atmosphere from all carbon adsorption equipment that is used for organic adsorption, organic desorptions or carbon regeneration, organic recovery, and carbon disposal.

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ST.540.15. When transferring hazardous waste to a tank, specific requirements must be met (40 CFR 262.34(a)(1)(ii), 265.202, and 265.1085(j)).	Verify that transfer of hazardous waste to the tank from another tank or from a surface impoundment is done using continuous hard piping or another closed system that does not allow exposure of the hazardous waste to the atmosphere. (NOTE: These requirements do not apply when transferring a hazardous waste to a tank under the following conditions: – the hazardous waste meets the average VO concentration of less than 500 ppm at the point of waste origination – the hazardous waste has been treated by an organic destruction or removal process – the hazardous waste meets the numerical concentrations limits for organic hazardous constituents as specified in 40 CFR 280 – the hazardous waste has been treated by the treatment technology established by the U.S. EPA or has been removed or destroyed by an equivalent method of treatment.)
ST.540.16. Facilities are required to meet inspection and repair requirements for tanks (40 CFR 262.34(a)(1)(ii), 265.202, and 265.1085(c)(4), 265.1085(e)(3), 265.1085(f)(3), 265.1085(g)(3), 265.1085(k) and 265.1085(l)).	Verify that fixed roofs and closure devices are inspected and managed as follows: – visually inspected for defects that could result in air pollutant emissions – initial inspection is on or before the date that the tank becomes subject to these requirements – inspected annually after the initial inspection. Verify that internal floating roofs are inspected and managed as follows: – visually inspected for defects that could result in air pollutant emissions – inspected through the openings in the fixed roof at least once every 12 mo – when the tank is emptied and degassed, inspected at least every 10 yr. (NOTE: As an alternative to the requirements for inspecting the internal floating roof, if an internal floating roof is equipped with two continuous seals, one above the other, visual inspection may be done of the internal floating roof, primary and secondary seals, gaskets, slotted membranes, and sleeve seals each time the tank is emptied and degassed and at least every 5 yr.) Verify that inspection of external floating roofs are done and managed as follows: – measurement of the gaps between the tank wall and the primary seal are done within 60 calendar days after initial operation of the tank following installation of the floating roof and thereafter at least once every 5 yr – measurement of gaps between the tank wall and the secondary seal are done within 60 calendar day after initial operation of the tank following installation of the floating roof and thereafter at least once every year – the floating roof and closure devices are visually inspected for defects that

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	could result in air pollutant emissions initially on or before the date that the tank becomes subject to this regulation and thereafter annually. NOTE: If a tank ceases to hold hazardous waste for a period of 1 yr or more, subsequent introduction of hazardous waste into the tank will be considered an initial operation for inspection purposes.) Verify that the U.S. EPA Regional Administrator is notified prior to each of the inspections of the internal floating or the external floating roof as follows: – prior to each visual inspection of the internal floating roof or the external floating roof in a tank that has been emptied and degassed, written notification is sent so that it is received by the U.S. EPA Regional Administrator at least 30 calendar days before refilling the tank except when an inspection is not planned – prior to each inspection to measure external floating roof seal gaps, written notification is sent so that it is received by the U.S. EPA Regional Administrator at least 30 calendar days before the date the measurements are scheduled to be performed – when a visual inspection is not planned and could not have been known about, the U.S. EPA Regional Administrator is notified as soon as possible but no later than 7 calendar days before refilling the tank. Verify that, for fixed roofs and associated closure devices, the air emission control equipment is visually inspected for defects that could result in air pollutant emissions initially before the tank becomes subject to these requirements and thereafter annually. Verify that defects detected during inspections are repaired as follows: – first efforts at repair are made no later than 5 calendar days after detection – repair is completed no later than 45 days after detection unless it is determined that the repair requires emptying or temporary removal from service of the tank and no alternative capacity is available to accept the hazardous waste managed in the tank. NOTE: After the initial inspections of the cover, following inspections may be performed at intervals longer than 1 yr under the following conditions: – when inspecting or monitoring the cover would expose a worker to dangerous, hazardous, or other unsafe conditions and the cover is designated as unsafe to inspect – when the tank is buried partially or entirely underground, only those portions aboveground are monitored annually.)

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ST.540.17. Facilities are required to meet documentation requirements for tanks (40 CFR 262.34(a)(1)(ii), 265.202, 265.1090(a), 265.1090(b), and 265.1090(e) through 265.1090(i)).	Verify that the following records are kept for tanks using air emissions control:
	
	– *a tank identification number or other unique identifying description*
	– a record for each required inspection that includes the following:
	  – date the inspection was done
	  – location and description of defects
	  – date of detection and corrective action to repair.
	
	Verify that, for tanks using fixed roofs to meet Level 1 control standards, records are kept for each determination of the maximum organic vapor pressure of the hazardous waste, including the date and time the samples were collected, analysis method used, and analysis results.
	
	Verify that, for tanks using internal floating roofs to meet Level 2 control standards, documentation is maintained describing the floating roof design.
	
	Verify that, for tanks using external floating roofs to comply with Level 2 control standards, the following records are maintained:
	
	– documentation describing the floating roof design and the dimensions of the tank
	– records for each seal gap inspection, including the date, results, and calculations.
	
	Verify that, for situations where an enclosure is being used to comply with Level 2 control requirements, the following are maintained:
	
	– records for the most recent set of calculations and measurements performed by the owner or operator to verify that the enclosure meets the criteria for a permanent total enclosure
	– all records required for closed vent systems and control devices.
	
	Verify that, if using a closed-vent system and control device, the following records are maintained:
	
	– certification that is signed and dated by the owner/operator stating that the control device is designed to operate at the performance level documented by a design analysis or by performance tests when the tank is operating at capacity or the highest level reasonably expected to occur
	– design documents if design analysis is used, including information describing the control device design and certification that the equipment meets the applicable specification
	– a performance test plan if performance tests are used
	– description and date of each modification, as applicable
	– identification of operating parameters, description of monitoring devices, and diagrams of monitoring sensor locations, as applicable

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	– semiannual records of the following for those planned routine maintenance operations that would require the control device to exceed limitations: – a description of the planned routine maintenance that is anticipated to be performed for the control device during the next 6-mo period, including the type of maintenance needed, planned frequency, and lengths of maintenance periods – a description of the planned routine maintenance that was performed for the control device during the previous 6-mo period, including the type of maintenance performed and the total number of hours during those 6 mo that the control device did not meet applicable requirements – records of the following for those unexpected control device system malfunctions that would cause the control device to not meet specifications: – the occurrence and duration of each malfunction of the control device system – the duration of each period during a malfunction when gases, vapors, or fumes are vented from the waste management unit through the closed vent system to the control device while the control device is not properly functioning – actions taken during periods of malfunction to restore a malfunctioning control device to its normal or usual manner of operation – records of the management of the carbon removed from a carbon adsorption system. Verify that, for exempted tanks (see the definition of Exempted Hazardous Waste Storage Tanks), the following records are prepared and maintained as applicable: – if exempted under the hazardous waste concentration conditions, information used for the waste determination in the facility operating log and/or the date, time, and location of each waste sample if analysis results for samples are used – if exempted under incineration use or process destruction use, the identification number for the incinerator, boiler, or industrial furnace in which the hazardous waste is treated. Verify that the covers which are designated as unsafe to monitor, are listed in a log kept in the facility operating record with an explanation of why they are unsafe to inspect and monitor and a plan and schedule of inspection and monitoring is recorded. Verify that, for tanks not using the air emissions controls specified in 40 CFR 265.1085 through 265.1088, the following information is maintained: – a list of the individual organic peroxide compounds manufactured at the facility if it produces more than one functional family of organic peroxides or multiple organic peroxides within one functional family, and one or more of these organic peroxides could potentially undergo self-accelerating thermal

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	decomposition at or below ambient temperatures
	– a description of how the hazardous waste containing the organic peroxide compounds identified in the above list are managed, including:
	  – a facility identification number for the tank or group of tanks
	  – the purpose and placement of this tank or group of tanks in the management train of this hazardous waste
	  – the procedures used to ultimately dispose of the hazardous waste handled in the tanks
	– an explanation why managing these tanks would be an undue safety hazard
	– certification that the tank is not using inappropriate emissions control devices
	– identification of the requirements in 40 CFR 60, 61, or 63 that the tank is in compliance with.
	
	Verify that all records, except design information records, are kept for at least 3 yr.
	
	Verify that design information records are maintained in the operating record until the air emissions control equipment is replaced or otherwise no longer in service.

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HAZARDOUS WASTE STORAGE TANKS ***ST.560*** **Treatment, Storage, and Disposal Facilities**	(NOTE: See Appendix E of this document for guidance on the schedule for implementation of air emissions standards in 40 CFR 265.1080 through 265.1091. Also, in relation to the requirements for air emissions standards, see the definition of *Exempted Hazardous Waste Management Units.*)
ST.560.1. Secondary containment is required for specific types of tank systems used to store or treat hazardous waste at TSDFs (40 CFR 264.190(a), 264.190(b), 264.193(a), 265.190(a), 265.190(b), and 265.193(a)).	Verify that tanks that accumulate or treat material that becomes hazardous waste have secondary containment as follows: – for all new tank systems or components, prior to their being put into service – for those existing tank systems of known and documentable age, within 2 yr after January 12, 1987, or when the tank systems have reached 15 yr of age, whichever comes later – for those existing tank systems for which the age cannot be documented, within 8 yr of January 12, 1987; but if the age of the facility is greater then 7 yr by the time the facility reaches 15 yr of age or within 2 yr of January 12, 1987, whichever comes later. (NOTE: The following are exempt from these requirements: – tank systems that are used to store or treat hazardous waste that contains no free liquids and that are situated inside a building with an impermeable floor – tank systems, including sumps, that serve as part of a secondary containment system to collect or contain releases of hazardous wastes.)
ST.560.2. Secondary containment on tank systems at TSDFs must meet specific requirements (40 CFR 264.190(a), 264.193(b) through 264.193(d), 265.190(a), and 265.193(b) through 265.193(d)).	Verify that secondary containment meets the following criteria: – it is designed, installed, and operated to prevent the migration of liquid out of the system – it is capable of detecting and collecting releases and accumulated liquids until removal – it is constructed of or lined with materials compatible with the wastes – it is strong enough and of sufficient thickness to prevent failure due to pressure gradients, climatic conditions, stress of installation and daily operation – it is placed on a foundation or base that can provide appropriate support and prevent failure due to settlement, compression, or upset – a leak-detection system is present that is designed and operated to detect the failure of either the primary or secondary containment structure or the release of any hazardous waste within 24 h or the earliest practicable time – it is sloped or designed to drain and remove liquids from leaks, spills, or precipitation.

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	Verify that spilled or leaked wastes are removed from secondary containment within 24 h or as timely as possible. Verify that secondary containment for tanks includes one or more of the following: – a liner (external to the tank) – a vault – a double-walled tank – an equivalent approved device. (NOTE: Tank systems that are used to store or treat hazardous waste that contains no free liquids and are situated inside a building with an impermeable floor are exempt from these requirements.)
ST.560.3. External liners, vaults and double- walled tanks at TSDFs are required to meet specific standards (40 CFR 264.190(a), 264.193(e), 265.190(a), and 265.193(e)).	Verify that external liner systems meet the following requirements: – it is designed and operated so that 100 percent of the capacity of the largest tank within the boundary would be contained – it prevents run-on and infiltration of precipitation into the secondary containment unless the collection system has sufficient capacity to handle run-on or infiltration – it is free of cracks or gaps – it surrounds the tank completely and covers all surrounding earth likely to come into contact with the waste if there is a release – capacity is sufficient to contain precipitation from a 24-h, 25-yr rainfall event. Verify that vault systems meet the following criteria: – it will contain 100 percent of the capacity of the largest tank within its boundary – it prevents run-on and infiltration of precipitation unless there is sufficient excess capacity including capacity to contain precipitation from a 25-yr, 24-h rainfall event – it is constructed with chemical-resistant water stops at all joints – it has an impermeable interior coating that is compatible – it has a means to protect against the formation of, and ignition of, vapors within the vault if the waste is ignitable or reactive – it has an exterior moisture barrier or otherwise operated to prevent migration of moisture into the vault. Verify that double-walled tanks meet the following criteria: – it is designed as an integral structure so that any release is contained by the outer shell

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	– it is protected from both corrosion of the primary tank and the external surface of the outer shell if constructed of metal – it has a built-in continuous leak detection system capable of detecting a release within 24 h. (NOTE: Tank systems used to store or treat hazardous waste that contains no free liquids and are situated inside a building with an impermeable floor are exempt from these requirements.)
ST.560.4. Tank ancillary equipment at TSDFs must also be provided with secondary containment (40 CFR 264.190(a), 264.193(f), 265.190(a), and 265.193(f)).	Verify that ancillary equipment, except for the following, has secondary containment: – aboveground piping that is visually inspected for leaks on a daily basis – welded flanges, welded joints, and welded connections that are visually inspected for leaks on a daily basis – sealless or magnetic coupling pumps and sealless valves that are visually inspected for leaks on a daily basis – pressurized aboveground piping systems with automatic shutoff valves that are visually inspected for leaks on a daily basis. (NOTE: Tank systems used to store or treat hazardous waste that contains no free liquids and are situated inside a building with an impermeable floor are exempt from these requirements.)
ST.560.5. Existing tank systems at TSDFs must meet specific requirements (40 CFR 264.190(a), 264.191(a) through 264.191(c), 264.193(i), 265.190(a), 265.191(a) through 265.191(c), and 265.193(i)).	Verify that existing tank systems without secondary containment meet the following: – for nonenterable underground tanks a leak test is conducted annually – for other than nonenterable underground tanks either a leak test is done annually or an annual schedule and procedures for an assessment of the overall condition is developed by an independent, qualified, registered professional engineer – for ancillary equipment a leak test or other approved integrity assessment at least annually. Verify that the TSDF maintains a record of the results of testing and assessments. Verify that tank systems which store or treat materials that become hazardous waste after July 14, 1986 are assessed within 12 mo after the waste becomes hazardous. (NOTE: Tank systems that are used to store or treat hazardous waste that contains no free liquids and are situated inside a building with an impermeable floor are

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	exempt from these requirements.)
ST.560.6. TSDFs with new tank systems must submit to the U.S. EPA Regional Administrator or authorized regulatory agency a written assessment review certified by an independent, qualified, registered professional engineer and install the tank according to specific standards (40 CFR 264.192 and 265.192).	Determine if the TSDF has any new tank systems. Verify that, when the tanks are installed, they are handled so as to prevent damage to the tank and any backfill material that is used is a noncorrosive, porous, homogeneous substance. Verify that ancillary equipment is supported and protected against damage and stress. Verify that the written assessments from the individuals required to certify the tank and supervise the installation of the tank are kept on file.
ST.560.7. Tanks used for hazardous waste treatment or storage at TSDFs must follow certain operating requirements (40 CFR 264.194 and 265.194).	Verify that hazardous wastes or treatment reagents are not placed in tanks if they could cause the tank system (including ancillary equipment or containment system) to fail. Verify that appropriate measures are taken to prevent overfill, including: – spill prevention controls – overfill prevention controls – maintenance of sufficient freeboard to prevent overtopping by wave, wind action, or precipitation for uncovered tanks.
ST.560.8. Tank systems at TSDFs must comply with requirements for ignitable, reactive, or incompatible wastes (40 CFR 264.198, 264.199, 265.198, and 265.199).	Verify that ignitable or reactive wastes are not placed in a tank system, unless one of the following is met: – the waste is treated, rendered, or mixed before or immediately after placement in the tank system so that it is no longer reactive or ignitable and the minimum requirements for reactive and ignitable wastes are met – the waste is treated or stored in such a way that it is protected from any material or conditions that may cause the waste to ignite or react – the tank system is used solely for emergencies. Verify that the minimum protective distances between waste management areas and any public ways, streets, alleys, or an adjoining property line that can be built upon as required in Tables 2-1 through 2-6 of the NFPA's *Flammable and Combustible Liquids Code* are maintained.

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	Verify that incompatible waste, or incompatible wastes and materials, are not placed in the same tank system unless minimum safety requirements are met. Verify that hazardous waste is not placed in a tank system that has not been decontaminated and that previously held an incompatible waste or material unless minimum safety requirements are met.
ST.560.9. Personnel at TSDFs must conduct inspections of tank systems and associated equipment (40 CFR 264.195 and 265.195).	Verify that a schedule and procedure has been developed and is followed to inspect overfill controls. Determine if the following inspections are conducted at least once a day: – overfill/spill control equipment to ensure it is in good working order – aboveground portions of the tank to detect corrosion or releases – data gathered from tank monitoring equipment (e.g., pressure and temperature gauges) – construction materials and the area immediately surrounding tank including the secondary containment system to detect signs of erosion or signs of leakage (wet spots, dead vegetation). Verify that the proper operation of cathodic protection systems are inspected within 6 mo after initial installation and annually thereafter. Verify that all sources of impressed current are inspected and/or tested every other month. Verify that inspections are documented

ST.560.10. Tank systems or secondary containment systems at TSDFs from which there has been a leak or spill or which have been declared unfit for use must be removed from service immediately and specific requirements met (40 CFR 264.196 and 265.196).	Verify that the following steps are taken:
	
	– the flow or addition of hazardous wastes to the tank is stopped
	– the hazardous waste is removed from the tank:
	  – within 24 h of detection (or at the earliest practicable time as demonstrated by the owner or operator) remove as much waste from the tank as necessary to prevent further release and allow inspection and repair
	  – within 24 h (or in as timely a manner as is possible to prevent harm to human health and the environment) remove waste released to secondary containment system
	– a visual inspection of the release is done and:
	  – action is taken to prevent further migration to soils.or surface or ground water
	  – any visible contamination of soil and surface water is removed and disposed.

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	Verify that notification is made within 24 h for any release to the environment to the regional administrator except for releases of 0.45 kg (1 lb) or less that are immediately contained and cleaned up. Verify that a report is submitted within 30 days containing the following information: – likely route of migration – characteristics of the surrounding soil – results of any monitoring or sampling – proximity to downgradient drinking water, surface water, and population areas – description of response actions taken or planned. Verify that the tank and/or secondary containment is repaired prior to its return to service and that extensive repairs are certified by an independent, qualified, registered, professional engineer.
ST.560.11. TSDFs are required to follow specific procedures when closing a tank system (40 CFR 264.197(a), 264.197(b), 265.197(a), and 265.197(b)).	Determine if the TSDF has closed any tank systems. Verify that all waste residues, contaminated containment system components, contaminated soils, and structures and equipment contaminated with waste have been removed or decontaminated. Verify that, if it is not possible and/or practicable to remove or decontaminate all soils, the tank is closed and postclosure care is performed as is required for landfills.

ST.560.12. Certain tanks used for the storage of hazardous waste are required to meet Level 1 control standards for air emissions control (40 CFR 262.34(a)(1)(ii), 264.200, 264.1084(a) through 264.1084(c)(3), 265.202, and 265.1085(a) through 265.1085(c)(3)).	(NOTE: See the definition of *Exempted Waste Management Unit* and *Exempted Hazardous Waste Storage Tanks* for exemptions to these requirements.)
	
	Verify that the following tanks meet the requirements for Tank Level 1 controls:
	
	– the hazardous waste in the tank has a maximum organic vapor pressure which is less than the maximum organic vapor pressure for the tank's design capacity category as follows:
	  – for a tank design capacity equal to or greater than 151 m^3, the maximum organic vapor pressure limit for the tank is 5.3 kPa
	  – for a tank design capacity equal to or greater than 75 m^3 but less than 151 m^3, the maximum organic vapor pressure limits for the tank is 27.6 kPa
	  – for a tank design capacity less than 75 m^3, the maximum organic vapor pressure limit for the tank is 76.6 kPa

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	– the hazardous waste in the tank is not heated to a temperature that is greater than the temperature at which the maximum organic vapor pressure of the hazardous waste is determined
	– the hazardous waste in the tank is not treated using a waste stabilization process.
	
	Verify that tanks not required to meet the requirements for Level 1 controls meet he requirements for Level 2 controls.
	
	Verify that, when required, the following Level 1 controls are met:
	
	– the maximum organic vapor pressure for a hazardous waste is determined before the first time the waste is placed in the tank
	– new maximum organic vapor pressure determinations are made each time there are changes to the hazardous waste which could cause the maximum organic vapor pressure to increase to a level that is equal to or greater than the maximum organic vapor pressure limit for the tank capacity.
	
	Verify that tanks requiring Level 1 control are equipped with a fixed roof designed is follows:
	
	– the roof and its closure devices are designed to form a continuous barrier over the entire surface area of the hazardous waste in the tank
	– the fixed roof is installed so that there are no visible cracks, holes, gaps, or other open spaces between roof section joints or between the interface of the roof edge and the tank wall
	– each opening in the fixed roof, and any manifold system associated with the fixed roof, meets one of the following:
	  – it is equipped with a closure device designed to operate so that when the closure device is secured in the closed position there are no visible cracks, holes, gaps, or other open spaces in the closure device or between the perimeter of the opening and the closure device
	  – connected by a closed vent system that is vented to a control device which removes or destroys organics in the vent stream and operates whenever hazardous waste is in the tank except during periods of required access to the tank
	– the fixed roof and closure devices are made of suitable materials that minimize exposure of the hazardous waste to the atmosphere to the extent practical and maintain the integrity of the fixed roof and closure devices throughout their intended service life.
	
	Verify that, for tanks requiring Level 1 control, whenever hazardous waste is in the ank, a fixed roof is installed with each closure device secured in the closed osition except as follows:
	
	– opening of the closure devices or removal of the fixed roof is allowed in

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	order to: – provide access to the tank for performing routine inspections, maintenance, or other activities needed for normal operations – remove accumulated sludge or other residues at the bottom of the tank – opening of a spring-loaded pressure vacuum relief valve, conservation vent, or similar type of pressure relief device is allowed during normal operations in order to maintain the tanks internal pressure in accordance with design standards – opening of a safety device in order to avoid unsafe conditions.

ST.560.13. Certain tanks are required to use Level 2 control standards for air emissions control (40 CFR 262.34(a)(1)(ii), 264.200, 264.1084(b)(2), 264.1084(d) through 264.1084(i)(3), 265.202, 265.1085(b)(2), and 265.1085(d) through 265.1085(i)(3)).	NOTE: See the definition of *Exempted Waste Management Unit* and *Exempted Hazardous Waste Storage Tanks* for exemptions to these requirements.)
	
	Verify that tanks not required to meet the requirements for Level 1 controls meet the requirements for Level 2 controls.
	
	Verify that, when using Level 2 controls, the following types of tanks are used:
	
	– a fixed roof tank equipped with an internal floating roof
	– a tank equipped with an external floating roof
	– a tank vented through a closed vent system to a control device
	– a pressure tank
	– a tank located inside an enclosure that is vented through a closed vent system to an enclosed combustion device control device.
	
	Verify that, when a fixed roof with an internal floating roof is used, the following requirements are met:
	
	– the internal floating roof is designed to float on the liquid surface except when the floating roof is supported by the leg supports
	– the internal floating roof is equipped with a continuous seal between the wall of the tank and the floating roof edge that meets one of the following requirements:
	  – a single continuous seal that is either a liquid mounted seal or a metallic shoe seal
	  – two continuous seals mounted one above the other
	– the internal floating roof meets the following specifications:
	  – each opening in a noncontact internal floating roof, except for automatic bleeder vents and rim space vents, provides a projection below the liquid surface
	  – each opening in the internal floating roof is equipped with a gasketed cover or a gasketed lid except for leg sleeves, automatic bleeder vents, rim space vents, column wells, ladder wells, sample wells, and stub drains
	  – each penetration of the internal floating roof for sampling has a slit

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	fabric cover that covers at least 90 percent of the opening – each automatic bleeder vent and rim space vent is gasketed – each penetration of the internal floating roof that allows for passage of a ladder has a gasketed sliding cover – each penetration of the internal floating roof that allows for passage of a column supporting the fixed roof has a flexible fabric sleeve seal or a gasketed sliding cover – the tank is operated such that when the floating roof is resting on the leg supports, the process of filling, emptying, or refilling is continuous and is completed as soon as practical – automatic bleeder vents are set at closed at all times when the roof is floating, except when the roof is being floated off or is being landed on the leg supports – before filling the tank, each cover, access hatch, gauge float well, or lid on any opening in their internal floating roof is bolted or fastened closed – rim space vents are set to open only when the internal floating roof is not floating or when the pressure beneath the rim exceeds recommended settings. Verify that, when an external floating roof is used to control air emissions, the following requirements are met: – the external floating roof is designed to float on the liquid surface except when the floating roof is supported by leg supports – the floating roof is equipped with two continuous seals, one above the other, between the wall of the tank and the roof edge – the primary seal is a liquid mounted seal or a metallic shoe seal and the total area of the gaps between the tank wall and the primary seal do not exceed 212 cm^2/m of tank diameter and the width of any portion of these gaps does exceed 3.8 cm – if a metallic shoe seal is used for the primary seal, it is designed so that one end extends into the liquid in the tank and the other end extends a vertical distance of at least 61 cm above the liquid surface – the secondary seal is mounted above the primary seal and covers the annular space between the floating roof and the wall of the tank and the total area of the gaps between the tank wall and the secondary seal do not exceed 21.2 cm^2/m of tank diameter and the width of any portion of these gaps does not exceed 1.3 cm – the external floating roof meets the following: – each opening in a noncontact external floating roof provides a projection below the liquid surface except for automatic bleeder vents and rim space vents – each opening is equipped with a gasketed cover, seal, or lid except for automatic bleeder vents, rim space vents, roof drains, and leg sleeves – each access hatch and each gauge float is equipped with a cover designed to be bolted or fastened when the cover is secured in the closed position

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	– each automatic bleeder vent and each rim space vent is equipped with a gasket
	– each roof drain that empties into the liquid managed in the tank is equipped with a slotted membrane fabric cover that covers at least 90 percent of the area of the opening
	– each unslotted and slotted guide pole well is equipped with a gasketed sliding cover or a flexible fabric sleeve seal
	– each unslotted guide pole is equipped with a gasketed cap on the end of the pole
	– each slotted guide pole is equipped with a gasketed float or other device to close off the liquid surface from the atmosphere
	– each gauge hatch and sample well is equipped with a gasketed cover.
	
	Verify that, when an external floating roof is used, the tank is operated as follows:
	
	– when the floating roof is resting on the leg supports, the process of filling, emptying, or refilling is continuous and completed as soon as practical
	– each opening in the roof, except for automatic bleeder vents, rim space vents, roof drains, and leg sleeves, is secured and maintained in a closed position at all times except when the closure device is opened for access
	– covers on each access hatch and each gauge float well are bolted or fastened when secured in the closed position
	– automatic bleeder vents are set closed at all times when the roof is floating except when the roof is being floated off or is being landed on the leg supports
	– rim space vents are set to open only at those times that the roof is being floated off the roof leg supports or when the pressure beneath the rim seal exceeds the manufacturer's setting
	– the cap on the end of each unslotted guide pole is secured in the closed position at all times except when measuring the level or collecting samples of the liquid in the tank
	– the cover on each gauge hatch or sample well is secured in the closed position at all times except when the hatch or well must be opened for access
	– both the primary seal and the secondary seal completely cover the annular space between the external floating roof and the wall of the tank in a continuous fashion except during inspection.
	
	Verify that, when air emissions are controlled from a tank by venting the tank to a control device, the following requirements are met:
	
	– the tank is covered by a fixed roof and vented directly through a closed vent system to a control device as follows:
	  – the fixed roof and its closure devices form a continuous barrier over the entire surface area of the liquid in the tank
	  – each opening in the fixed roof not vented to a control device is equipped with a closure device

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	– the fixed roof and the closure devices are made of suitable materials to minimize exposure of the hazardous waste to the atmosphere, and maintain the integrity of the fixed roof and closure devices throughout their intended service life – the closed vent system is designed according to the requirements in 40 CFR 264/1087/265.1088 – whenever a hazardous waste is in the tank, the fixed roof is installed with each closure device secured in the closed position and the vapor headspace underneath the fixed roof is vented to the control device except as follows: – to provide access to the tank for performing routine inspection, maintenance, or other activities needed for normal operations – to remove accumulated sludge or other residues from the bottom of the tank – opening of safety devices to avoid an unsafe condition. Verify that, when a pressure tank is used to control emissions, the following requirements are met: – the tank is designed not to vent to the atmosphere as a result of compression of the vapor headspace in the tank during the filling of the tank to capacity – all tank openings are equipped with closure devices designed to operate with no detectable organic emissions – whenever a hazardous waste is in the tank, it is operated as a closed system that does not vent to the atmosphere except when a safety device is opened to avoid an unsafe condition or when purging of inerts is required and the purge stream is routed to a closed-vent system and appropriate control device. Verify that, if air emissions are being controlled by using an enclosure vented through a closed vent system to an enclosed combustion control device, the following are met: – the tank is located inside an enclosure that is designed and operated according to the criteria for a permanent total enclosure as specified in 40 CFR 52.741, Appendix B – the enclosure is vented through a closed vent system to an enclosed, combustion control device that is designed and operated according to the standards in 40 CFR 264.1087/265.1088 – all safety devices, if present, remain in the closed position during normal operations and are not used for venting of gases from the vapor headspace of the tank during tank filling operations or as a means of adjusting pressure in the tank.

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ST.560.14. Closed vent systems are required to be designed according to specific standards (40 CFR 262.34(a)(1)(ii) 264.200, 264.1087, 265.202, and 265.1088).	(NOTE: See the definition of *Exempted Waste Management Unit* for exemptions o these requirements.)
	
	/erify that closed-vent systems:
	
	– route the gases, vapors, and fumes emitted from the hazardous waste to a **control device**
	– are designed according to 40 CFR 264.1033(k)/265.1033(j)
	– meet the following if they contain bypass devices, except for low leg drains, high point bleeds, analyzer vents, open ended valves or lines, spring loaded pressure relief valves, and other fittings used for safety devices, that could be used to divert the gas or vapor stream before entering the control device:
	  – it is equipped with a flow indicator installed at the inlet to the bypass line used to divert gases and vapors from the closed vent system to the atmosphere at a point upstream of the control device inlet
	  – it is equipped with a seal or locking device placed on the mechanism by which the bypass device is in the closed position so that the bypass device cannot be opened without breaking the seal or removing the lock
	  – seals or closure mechanism are inspected at least once a month.
	
	/erify that the control device meets the following:
	
	– it is one of the following:
	– a control device designed and operated to reduce the total organic content of the inlet vapor stream vented to the control device by at least 95 percent weight
	– an enclosed combustion device
	– a flare
	– periods of planned routine maintenance to the control device during which the control device does not meet specifications do not exceed 240 h/yr
	– all activated carbon in the control device is replaced on a regular basis after start-up if carbon adsorption is used
	– operation and maintenance is done in accordance with 40 CFR 264.1033(k) or 40 CFR 265.1033(j) if a control device is used other than a thermal vapor incinerator, flare, boiler, process heater, condenser, or carbon adsorption system
	– achievement of control device performance requirements is done by a performance test or design analysis for each control device except for the following:
	  – a flare
	  – a boiler or process heater with a design heat input capacity of 44 MW or greater
	  – a boiler of process heater into which the vent stream is introduced with the primary fuel
	  – *a boiler or industrial furnace burning hazardous waste for which a final* permit has been issued and the unit is designed and operated in

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	accordance with 40 CFR 266 – a boiler or process heater for which the owner/operator has certified compliance – carbon adsorption systems demonstrate achievement of performance requirements based on the total quantity of organics vented to the atmosphere from all carbon adsorption equipment that is used for organic adsorption, organic desorptions or carbon regeneration, organic recovery, and carbon disposal.
ST.560.15. When transferring hazardous waste to a tank, specific requirements must be met (40 CFR 262.34(a)(1)(ii), 264.200, 264.1084(j), 265.202, and 265.1085(j)).	Verify that transfer of hazardous waste to the tank from another tank or from a surface impoundment is done using continuous hard piping or another closed system that does not allow exposure of the hazardous waste to the atmosphere. (NOTE: These requirements do not apply when transferring a hazardous waste to a tank under the following conditions: – the hazardous waste meet the average VO concentration of less than 500 ppm at the point of waste origination – the hazardous waste has been treated by an organic destruction or removal process.)
ST.560.16. TSDFs are required to meet inspection and repair requirements for tanks (40 CFR 262.34(a)(1)(ii), 264.200, 264.1084(c)(4), 264.1084(e)(3), 264.1084(f)(3), 264.1084(g)(3), 264.1084(k), 264.1084(l), 265.202, 265.1085(c)(4), 265.1085(e)(3), 265.1085(f)(3), 265.1085(g)(3), 265.1085(k) and 265.1085(l)).	Verify that fixed roofs and closure devices are inspected and managed as follows: – visually for defects that could result in air pollutant emissions – initial inspection is on or before the date that the tank becomes subject to these requirements – annually after the initial inspection. Verify that internal floating roofs are inspected and managed as follows: – visually for defects that could result in air pollutant emissions – inspect through the openings in the fixed roof at least once every 12 mo – when the tank is emptied and degassed, at least every 10 yr. (NOTE: As an alternative to the requirements for inspecting the internal floating roof, if an internal floating roof is equipped with two continuous seals, one above the other, visual inspection may be done of the internal floating roof, primary and secondary seals, gaskets, slotted membranes, and sleeve seals each time the tank is emptied and degassed and at least every 5 yr.) Verify that inspection of external floating roofs are done and managed as follows: – measurement of the gaps between the tank wall and the primary seal are done within 60 calendar days after initial operation of the tank following installation of the floating roof and thereafter at least once every 5 yr – measurement of gaps between the tank wall and the secondary seal are done

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	within 60 calendar day after initial operation of the tank following installation of the floating roof and thereafter at least once every year. – the floating roof and closure devices are visually inspected for defects that could result in air pollutant emissions initially on or before the date that the tank becomes subject to this regulation and thereafter annually. (NOTE: If a tank ceases to hold hazardous waste for a period of 1 yr or more, subsequent introduction of hazardous waste into the tank will be considered an initial operation for inspection purposes.) Verify that the U.S. EPA Regional Administrator is notified prior to each of the inspections of the internal or external floating roof as follows: – prior to each visual inspection of the internal floating roof or the external floating roof in a tank that has been emptied and degassed, written notification is sent so that it is received by the U.S. EPA Regional Administrator at least 30 calendar days before refilling the tank except when an inspection is not planned – prior to each inspection to measure external floating roof seal gaps written notification is sent so that it is received by the U.S. EPA Regional Administrator at least 30 calendar days before the date the measurements are scheduled to be performed – when a visual inspection is not planned and could not have been known about, the U.S. EPA Regional Administrator is notified as soon as possible but no later than 7 calendar days before refilling the tank. Verify that, for fixed roofs and associated closure devices, the air emission control equipment is visually inspected for defects that could result in air pollutant emissions initially before the tank becomes subject to these requirements and thereafter annually. Verify that defects detected during inspections are repaired as follows: – first efforts at repair are made no later than 5 calendar days after detection – repair is completed no later than 45 days after detection unless it is determined that the repair requires emptying or temporary removal from service of the tank and no alternative capacity is available to accept the hazardous waste managed in the tank. (NOTE: After the initial inspections of the cover, following inspections may be performed at intervals longer than 1 yr under the following conditions: – when inspecting or monitoring the cover would expose a worker to dangerous, hazardous, or other unsafe conditions and the cover is designated as unsafe to inspect – when the tank is buried partially or entirely underground, only those portions aboveground are monitored annually.)

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ST.560.17. TSDFs are required to meet documentation requirements for tanks (40 CFR 262.34(a)(1)(ii), 264.1089(a), 264.1089(b), and 264.1089(e) through 264.1089(i); 265.202, 265.1090(a), 265.1090(b), and 265.1090(e) through 265.1090(i)).	Verify that the following records are kept for tanks using air emissions control:
	
	– a tank identification number or other unique identifying description
	– a record for each required inspection that includes the following:
	  – date the inspection was done
	  – location and description of defects
	  – date of detection and corrective action to repair.
	
	Verify that, for tanks using fixed roofs to meet Level 1 control standards, records are kept for each determination of the maximum organic vapor pressure of the hazardous waste, including the date and time the samples were collected, analysis method used, and analysis results.
	
	Verify that, for tanks using internal floating roofs to meet Level 2 control standards, documentation is maintained describing the floating roof design.
	
	Verify that, for tanks using external floating roofs to comply with Level 2 control standards, the following records are maintained:
	
	– documentation describing the floating roof design and the dimensions of the tank
	– records for each seal gap inspection, including the date, results, and calculations.
	
	Verify that for situations where an enclosure is being used to comply with Level 2 control requirements, the following are maintained:
	
	– records for the most recent set of calculations and measurements performed by the owner or operator to verify that the enclosure meets the criteria for a permanent total enclosure
	– all records required for closed vent systems and control devices.
	
	Verify that, when measurements of seal gaps indicate nonconformance with specifications, records are kept that include a description of repairs that were made, date the repairs were made, and the date the tanks were emptied.
	
	Verify that, if using a closed-vent system and control device, the following records are maintained:
	
	– certification that is signed and dated by the owner/operator stating that the control device is designed to operate at the performance level documented by a design analysis or by performance tests when the tank is operating at capacity or the highest level reasonably expected to occur
	– design documents if design analysis is used, including information describing the control device design and certification that the equipment meets the applicable specification

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	– a performance test plan if performance tests are used
	– description and date of each modification, as applicable
	– identification of operating parameters, description of monitoring devices, and diagrams of monitoring sensor locations, as applicable
	– semiannual records of the following for those planned routine maintenance operations that would require the control device to exceed limitations:
	  – a description of the planned routine maintenance that is anticipated to be performed for the control device during the next 6-mo period, including the type of maintenance needed, planned frequency, and lengths of maintenance periods
	  – a description of the planned routine maintenance that was performed for the control device during the previous 6-mo period, including the type of maintenance performed and the total number of hours during those 6 mo that the control device did not meet applicable requirements
	– records of the following for those unexpected control device system malfunctions that would cause the control device to not meet specifications:
	  – the occurrence and duration of each malfunction of the control device system
	  – the duration of each period during a malfunction when gases, vapors, or fumes are vented from the waste management unit through the closed vent system to the control device while the control device is not properly functioning
	  – actions taken during periods of malfunction to restore a malfunctioning control device to its normal or usual manner of operation
	– records of the management of the carbon removed from a carbon adsorption system.
	
	Verify that, for exempted tanks (see the definition of Exempted Hazardous Waste Storage Tanks), the following records are prepared and maintained as applicable:
	
	– if exempted under the hazardous waste concentration conditions, information used for the waste determination in the facility operating log and/or the date, time, and location of each waste sample if analysis results for samples are used
	– if exempted under incineration use or process destruction use, the identification number for the incinerator, boiler, or industrial furnace in which the hazardous waste is treated.
	
	Verify that the covers which are designated as unsafe to monitor, are listed in a log kept in the facility operating record with an explanation of why they are unsafe to inspect and monitor and a plan and schedule of inspection and monitoring is recorded.
	
	Verify that, for tanks not using the air emissions controls specified in 40 CFR 264.1084 through 264.1087 or 40 CFR 265.1085 through 265.1088, the following

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	information is maintained:
	
	– a list of the individual organic peroxide compounds manufactured at the facility if it produces more than one functional family of organic peroxides or multiple organic peroxides within one functional family, and one or more of these organic peroxides could potentially undergo self-accelerating thermal decomposition at or below ambient temperatures
	– a description of how the hazardous waste containing the organic peroxide compounds identified in the above list are managed, including:
	  – a facility identification number for the tank or group of tanks
	  – the purpose and placement of this tank or group of tanks in the management train of this hazardous waste
	  – the procedures used to ultimately dispose of the hazardous waste handled in the tank
	– *an explanations why managing these tanks would be an undue safety hazard.*
	
	Verify that all records, except air emission control equipment design information records, are kept for at least 3 yr.
	
	Verify that air emission control equipment design information records are maintained in the operating record until the air emissions control equipment is replaced otherwise no longer in service.

T.560.18. TSDFs are equired to meet specific eporting requirements as elated to air emissions ontrols (40 CFR 64.1090(a), and 64.1090(b)).	Verify that a written report is submitted to the U.S. EPA Regional Administrator within 15 calendar days of becoming aware that hazardous waste is being managed in an exempted tank in noncompliance with the applicable design and operating requirements. Verify that written reports for noncompliance using exempted tanks contain: – U.S. EPA identification number – facility name and address – description of the noncompliance event and the cause – actions taken to correct noncompliance and prevent recurrence – date and signature by the authorized agent of the facility. Verify that the report contains an explanation of why the control device could not be returned to compliance within 24 h and actions taken to correct noncompliance. Verify that a written report is submitted to the U.S. EPA Regional Administrator within 15 calendar days of becoming aware that hazardous waste is being managed in a tank equipped with air emissions controls in noncompliance with the applicable design and operating standards and the report contains: – U.S. EPA identification number

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	– facility name and address – description of the noncompliance event and the cause – actions taken to correct noncompliance and prevent recurrence – date and signature by the authorized agent of the facility. (NOTE: If the facility received its permit under RCRA Section 3005 prior to December 6, 1995, these requirements will be incorporated in the permit when it is reviewed. Until that time, the TSDF is required to comply with 40 CFR 265 Subpart CC (40 CFR 264.1080(c) and 265.1080(c)).)

REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	COMPLIANCE CATEGORY STORAGE TANK MANAGEMENT REVIEWER CHECKS
ST.600 **USED OIL STORAGE TANKS**	
ST.600.1. The label USED OIL must be clearly marked on aboveground tanks used to store used oil and fill pipes used to transfer used oil into underground storage facilities at used oil generators (40 CFR 279.22(c)).	Verify that containers, aboveground tanks, and fill pipes used to transfer used oil are clearly marked with the phrase USED OIL (NOTE: See Appendix F of this document for guidance regarding regulatory classifications of used oil.)
ST.600.2. Aboveground tanks used to store used oil at used oil generators must be in good condition and not leaking (40 CFR 279.22(b)).	Verify that tanks are not leaking, bulging, rusting, damaged, or dented. (NOTE: See Appendix F of this document for guidance regarding regulatory classifications of used oil.)
ST.600.3. Do-it-yourselfer (DIY) used oil collection centers are required to meet the same tank standards as used oil generators (40 CFR 279.30).	Verify that DIY used oil collection centers meet the tank requirements outlined in checklist items ST.600.1 and ST.600.2.
ST.600.4. When storing used oil in tanks, transfer facilities are required meet specific requirements (40 CFR 279.45(b) through 279.45(g)).	Verify that used oil transfer facilities storing used oil in tanks, do not store used oil in units other than those subject to regulation under 40 CFR 264 or 265. Verify that aboveground tanks used to stored used oil at transfer facilities are in good condition (no severe rusting, apparent structural defects or deterioration); and not leaking. Verify that ASTs used to store used oil at transfer facilities have secondary containment that consists of the following minimum requirements: – dikes, berms, or retaining walls – a floor that covers the entire area within the dikes, berms, or retaining walls – the system is impervious to prevent migration to the soil, groundwater, or surface water.

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	Verify that ASTs are labeled with the phrase USED OIL. Verify that fill pipes used to transfer used oil into USTs at transfer facilities are labeled USED OIL.
ST.600.5. When storing used oil in tanks, used oil burners are required meet specific requirements (40 CFR 279.60(a), 279.60(c), and 279.64(a) through 279.64(f)).	Verify that ASTs used to stored used oil at are in good condition (no severe rusting, apparent structural defects or deterioration); and not leaking. Verify that ASTs used to store used oil have secondary containment that consists of the following minimum requirements: – dikes, berms, or retaining walls – a floor that covers the entire area within the dikes, berms, or retaining walls – the system is impervious to prevent migration to the soil, groundwater, or surface water. Verify that ASTs are labeled with the phrase USED OIL. Verify that fill pipes used to transfer used oil into USTs at transfer facilities are labeled USED OIL. (NOTE: The requirements for used oil burners do not apply to the following: – the used oil is burned by the generator in an on-site space heater under the provisions of 40 CFR 279.23 – the used oil is burned by a processor/re-refiner for purposes of processing used oil, which is considered burning incidentally to used oil processing – persons burning used oil that meets the used oil fuel specification of 40 CFR 279.11 (see Appendix F of this document), if the burner complies with the requirements for used oil fuel marketers.)
ST.600.6. Used oil marketers who generate used oil are required to also meet the standards for used oil generators (40 CFR 279.70(c)(1)).	Verify that used oil marketers who generate used oil also comply with checklist items ST.600.1 and ST.600.2.

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ST.600.7. When used oil is stored in a tank, used oil processors/re-refiners are required to meet specific requirements (40 CFR 279.50(a) and 40 CFR 279.54(a) through 279.54(f)).	Verify that aboveground tanks used to stored used oil at are in good condition (no severe rusting, apparent structural defects or deterioration); and not leaking. Verify that ASTs used to store used oil have secondary containment that consists of the following minimum requirements: – dikes, berms, or retaining walls – a floor that covers the entire area within the dikes, berms, or retaining walls – the system is impervious to prevent migration to the soil, groundwater, or surface water. Verify that ASTs are labeled with the phrase USED OIL. Verify that fill pipes used to transfer used oil into USTs at transfer facilities are labeled USED OIL. (NOTE: These requirements do not apply to either of the following: – transporters that conduct incidental processing operations that occur during the normal course of transportation as provided in 40 CFR 279.41 – burners that conduct incidental processing operations that occur during the normal course of used oil management prior to burning as provided in 40 CFR 279.61(b).)

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Protocol for Conducting Environmental Compliance Audits of Storage Tanks under RCRA

Appendix A:
Financial Responsibility Requirements And Deadlines For Various Groups Of Underground Storage Tank Owners And Operators

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Financial Responsibility Requirements and Deadlines for Various Groups of Underground Storage Tank Owners and Operators

Group Of Underground Storage Tank Owners And Operators	Compliance Deadline	Per Occurrence Coverage	Aggregate Coverage
GROUP 1: Petroleum marketers with 1,000 or more tanks *OR* Nonmarketers with net worth of $20 million or more (for nonmarketers, the "per occurrence" amount is the same as Group 4-B below)	January 1989	$1 million	$1 million if you have 100 or fewer tanks *OR* $2 million if you have more than 100 tanks
GROUP 2: Petroleum marketers with 100-999 tanks	October 1989		
GROUP 3: Petroleum marketers with 13-99 tanks	April 1991		
GROUP 4-A: Petroleum marketers with 1-12 tanks	December 1993		
GROUP 4-B: Nonmarketers with net worth of less than $20 million	December 1993	$500,000 if throughput is 10,000 gallons monthly or less *OR* $1 million if throughput is more than 10,000 gallons monthly	
GROUP 4-C: Local governments (including Indian tribes not part of Group 5)	February 1994		
GROUP 5: Indian tribes owning USTs on Indian lands (USTs must be in compliance with UST technical requirements)	December 1998		

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Appendix B:
Additional Underground Storage Tank Information

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Additional Underground Storage Tank Information

For information on USTs, you can go to U.S. EPA's Office of Underground Storage Tanks Web site at **http://www.epa.gov/OUST/** to download, order, or read documents online. You can call U.S. EPA's toll-free RCRA/Superfund Hotline at 1-800 - 424-9346 and order copies. Or you can write and ask for titles by addressing your request to NCEP, our publication distributor: NCEP, Box 42419, Cincinnati, OH 45242. Or you can make your request by calling NCEP's toll-free number at 1-800 - 490-9198. Or you can fax your order to NCEP at 513 - 891-6685.

1. Publications About USTs:

Musts For USTs: A Summary Of Federal Regulations For USTs. Booklet clearly summarizes federal UST requirements for installation, release detection, spill, overfill, and corrosion protection, corrective action, closure, reporting and recordkeeping. Updated & revised 1995. **Normas y Procedimientos para T.S.A.** Spanish translation of 1988 edition of **Musts For USTs** .

Catalog Of EPA Materials On USTs. This booklet provides an annotated list of UST materials and includes ordering information. Many of the informational leaflets, booklets, videos, and software items listed are designed to provide UST owners and operators with information to help them comply with the federal UST requirements.

Straight Talk On Tanks: Leak Detection Methods For Petroleum USTs. Booklet explains federal requirements for leak detection and describes allowable leak detection methods. Updated & revised 1995.

Doing Inventory Control Right: For USTs. Booklet describes how owners/operators of USTs can use inventory control and periodic tightness testing to meet federal leak detection requirements. Contains reporting forms.

Manual Tank Gauging: For Small USTs. Booklet provides simple, step-by-step directions for conducting manual tank gauging for tanks 2,000 gallons or smaller. Contains reporting forms.

Introduction To Statistical Inventory Reconciliation: For USTs. Booklet describes the use of Statistical Inventory Reconciliation (SIR) to meet federal leak detection requirements.

Getting The Most Out Of Your Automatic Tank Gauging System. Trifold leaflet provides a basic checklist for ensuring that this method is used effectively by UST owners and operators to comply with leak detection requirements.

Don't Wait Until 1998: Spill, Overfill, And Corrosion Protection For USTs. Information to help owners and operators of USTs meet the 1998 deadline for compliance with requirements to upgrade, replace, or close USTs installed before December 1988. Materials available as a 16-page booklet, a tri-fold leaflet, or Spanish translation of the booklet (*No Espere Hasta El 1998!*).

Dollars And Sense: Financial Responsibility Requirements For USTs. Booklet clearly summarizes the "financial responsibility" required of UST owners/operators by federal UST regulations.

An Overview Of UST Remediation Options. Information about technologies that can be used to remediate petroleum contamination in soil and groundwater.

Controlling UST Cleanup Costs. Fact sheet series on the cleanup process includes: *Hiring a Contractor, Negotiating the Contract, Interpreting the Bill, Managing the Process, and Understanding Contractor Code Words.*

Pay-For-Performance Cleanups: Effectively Managing UST Cleanups. Booklet explores potential advantages of using pay-for-performance cleanup agreements to reduce the cost and time of cleanups and more effectively manage cleanup resources.

2. Industry Codes And Standards:

Installation

API Recommended Practice 1615 (1996), "Installation of Underground Petroleum Storage Systems"

PEI RP100-97 (1997), "Recommended Practices for Installation of Underground Liquid Storage Systems"

Tank Filling Practices

NFPA 385 (1990), "Standard for Tank Vehicles for Flammable and Combustible Liquids"

Closure

API Recommended Practice 1604 (1996), "Closure of Underground Petroleum Storage Tanks"

Assessing Tank Integrity, Repairing Tanks, and Interior Lining Of Tank

API Recommended Practice 1631 (1997), "Interior Lining of Underground Storage Tanks"

NLPA Standard 631 (1991), "Entry, Cleaning, Interior Inspection, Repair, and Lining of Underground Storage Tanks"

Corrosion Protection

API Recommended Practice 1632 (1996), "Cathodic Protection of Underground Petroleum Storage Tanks and Piping Systems"

NACE RP-0169-96 (1996), "Standard Recommended Practice: Control of External Corrosion on Underground or Submerged Metallic Piping Systems"

NACE RP-0285-95 (1995), "Standard Recommended Practice: Corrosion Control of Underground Storage Tank Systems by Cathodic Protection"

STI R892-91 (1991), "Recommended Practice for Corrosion Protection of Underground Piping Networks Associated with Liquid Storage and Dispensing Systems"

General (Repair, Spill and Overfill, Installation, Compatibility)

API Recommended Practice 1621 (1993), "Bulk Liquid Stock Control at Retail Outlets"

API Recommended Practice 1626 (1985), "Storing and Handling Ethanol and Gasoline-Ethanol Blends at Distribution Terminals and Service Stations"

API Recommended Practice 1627 (1986), "Storage and Handling of Gasoline-Methanol/Cosolvent Blends at Distribution Terminals and Service Stations"

API Recommended Practice 1635 (1987), "Management of Underground Petroleum Storage Systems at Marketing and Distribution Facilities"

NFPA 30 (1996), "Flammable and Combustible Liquids Code"

NFPA 30A (1996), "Automotive and Marine Service Station Code"

3. Organizations

API -- American Petroleum Institute
1220 L Street, N.W.
Washington, DC 20005
(202) 682-8000

Fiberglass Petroleum Tank and
Pipe Institute
11150 South Wilcrest Dr., Suite 101
Houston, TX 77099-4343
(713) 465-3310

NACE International (formerly the National Association of Corrosion Engineers)
Box 218340
Houston, TX 77218-8340
(713) 492-0535

NFPA -- National Fire Protection Association
1 Batterymarch Park
Box 9101
Quincy, MA 02269-9101
(617) 770-3000

NLPA -- National Leak Prevention Association
Route 2, Box 106A
Falmouth, KY 41040
(606) 654-8265

PEI -- Petroleum Equipment Institute
Box 2380
Tulsa, OK 74101-2380
(918) 494-9696

Steel Tank Institute
570 Oakwood Road
Lake Zurich, IL 60047
(708) 438-TANK [8265]

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Protocol for Conducting Environmental Compliance Audits of Storage Tanks under RCRA

Appendix C:
Release Detection Requirements for Underground Storage Tanks and Underground Piping (40 CFR 280.43 and 280.44)

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Release Detection Requirements for Underground Storage Tanks and Underground Piping (40 CFR 280.43 and 280.44)

A. UST Options (see Appendix B of this document for a list of additional guidance documents)

1. **Inventory control:** Product inventory control must be conducted monthly to detect a release of at least 1.0 percent of flow-through plus 130 gal on a monthly basis in the following manner:
   - inventory volume measurements for regulated substance inputs, withdrawals, and the amount still remaining in the tank are recorded each operating day
   - the equipment used is capable of measuring the level of product over the full range of the tanks height to the nearest 1/8 in.
   - the regulated substance inputs are reconciled with delivery receipts by measurements of the tank inventory volume before and after delivery
   - deliveries made through a drop tube that extends to within 1 ft of the tank bottom
   - product dispensing is metered and recorded within the local standards for meter calibration or an accuracy of 6 cubic inches for every 5 gallons of product withdrawn, and
   - the measurement of any water level in the bottom of the tank is made to the nearest 1/8 in. at least once a month.

2. **Manual gauging:** manual tank gauging must meet the following requirements:
   - tank liquid level measurements are taken at the beginning and end of a period of at least 36 h during which no liquid is added to or removed from the tank
   - level measurements are based on an average of two consecutive stick readings at both the beginning and end of the period
   - the equipment used is capable of measuring the level of product over the full range of the tank's height to the nearest 1/8 in.
   - a leak is suspected and subject to the requirements of 40 CFR 280.50 through 280.53 if the variation between beginning and ending measurements exceeds the weekly or monthly standards of Table A below
   - only tanks of 550 gal or less nominal capacity may use this as a sole method of release detection. Tanks of 551 to 2000 gal may also use the inventory control method in paragraph 1 in this appendix. Tanks of greater than 2000 gal nominal capacity may not use this method to meet release detection requirements.

Table A

Nominal Tank Capacity	Weekly Standard (one test)	Monthly Standard (average of four)
550 gal or less	10 gal	5 gal
551-1000 gal	13 gal	7 gal
1001-2000 gal	26 gal	13 gal

3. **Tank tightness testing:** Tank tightness testing must be capable of detecting a 0.1 gal/h leak rate from any portion of the tank that routinely contains product while accounting for the effects of thermal expansion or contraction of the product, vapor pockets, tank deformation, evaporation or condensation, and the location of the water table.

4. **Tank automatic gauging:** Equipment for automatic tank gauging that tests for the loss of product and conducts inventory control; must meet the following requirements:
   - the automatic product level monitor test can detect a 0.2 gal/h leak rate from any portion of the tank that routinely contains product, and
   - inventory control is conducted according to requirements (see para 1 above).

5. **Vapor monitoring:** Testing or monitoring for vapors within the soil gas of the excavation zone must meet the following requirements:
   - the materials used as backfill are sufficiently porous (e.g., gravel, sand, crushed rock) to easily allow diffusion of vapors from releases into the excavation area
   - the stored regulated substance, or a tracer compound placed in the tank system, is sufficiently volatile (e.g., gasoline) to result in a vapor level that is detectable by the monitoring devices located in the excavation zone in the event of a release from the tank
   - the measurement of vapors by the monitoring device is not rendered inoperative by the ground water, rainfall, or soil moisture or other unknown interferences so that a release could go undetected for more than 30 days
   - the level of background contamination in the excavation zone will not interfere with the method used to detect releases from the tank
   - the vapor monitors are designed and operated to detect any significant increase in concentration above background of the regulated substance stored in the tank system, a component or components of that substance, or a tracer compound placed in the tank system
   - in the UST excavation zone, the site is assessed to ensure compliance with the requirements of paragraph 5 above and to establish the number and positioning of monitor wells that will detect any releases within the excavation zone from any portion of the tank that routinely contains product, and
   - monitoring wells are clearly marked and secured to avoid unauthorized access and tampering.

6. **Groundwater monitoring:** Testing or monitoring for liquids in the ground water must meet the following requirements:
   - the regulated substance stored is immiscible in water and has a specific gravity of less than one
   - groundwater is never more than 20 ft from the ground surface and the hydraulic conductivity of the soil(s) between the UST system and the monitoring wells or devices is not less than 0.01 cm/s (e.g., the soil should consist of gravels, coarse to medium sands, coarse silts or other permeable materials
   - the slotted portion of the monitoring well casing must be designed to prevent migration of natural soils or filter pack into the well and to allow entry of regulated substance on the water table into the well under both high and low ground water conditions
   - monitoring wells should be sealed from the ground surface to the top of the filter pack
   - monitoring wells or devices intercept the excavation zone or are as close to it as is technically feasible
   - the continuous monitoring devices or manual methods used can detect the presence of at least 1/8 in. of free product on tip of the ground water in the monitoring wells
   - within and immediately below the UST system excavation zone, the site is assessed to ensure compliance with the requirements of paragraph 6 above and to establish the number and positioning of monitoring wells or devices that will detect releases from any portion of the tank that routinely contains product, and
   - monitoring wells are clearly marked and secured to avoid unauthorized access and tampering.

7. **Interstitial monitoring:** Interstitial monitoring between the UST system and a secondary barrier immediately around or beneath it may be used, but only if the system is designed, constructed and installed to detect a leak from any portion of the tank that routinely contains product and also meets one of the following requirements:
   - for double-walled systems, the sampling or testing method can detect a release through the inner wall in any portion of the tank that routinely contains product
   - for UST systems with a secondary barrier within the excavation zone, the sampling or testing method used can detect a release between the UST system and the secondary barrier

- ⇒ the secondary barrier around or beneath the UST system consists of artificially constructed material that is sufficiently thick and impermeable (at least 10^{-6} cm/s for the regulated substance stored) to direct a release to the monitoring point and permit its detection
- ⇒ the barrier is compatible with the regulated substance stored so that a release from the UST system will not cause a deterioration of the barrier allowing a release to pass through undetected
- ⇒ for cathodically protected tanks, the secondary barrier must be installed so that it does not interfere with the proper operation of the cathodic protection system
- ⇒ the ground water, soil moisture, or rainfall will not render the testing or sampling method used inoperative so that a release could go undetected for more than 30 days
- ⇒ the site is assessed to ensure that the secondary barrier is always above the ground water and not in a 25 yr flood plain, unless the barrier and monitoring designs are for use under such conditions, and
- ⇒ monitoring wells are clearly marked and secured to avoid unauthorized access and tampering.

– for tanks with an internally fitted liner, an automated device can detect a release between the inner wall of the tank and the liner. The liner is compatible with the substance stored.

8. **Other methods:** Any other type of release detection method, or combination of methods, can be used if:
   - it can detect a 0.2 gal/h leak rate or a release of 150 gal within a month with a probability of detection of 0.95 and a probability of false alarm of 0.05, or
   - the implementing agency may approve another method, if it can be demonstrated that this method can detect releases as effectively as the methods listed in this appendix.

B. Underground Piping Options

1 **Automatic line detectors:** Methods which alert the operator to the presence of a leak by restricting or shutting off the flow of regulated substances through piping, or triggering an audible or visual alarm may be used only if they detect leaks of 3 gal/h at 10 lb/in.^{2} line pressure within 1 h. An annual test of the operation of the leak detector must be conducted in accordance with the manufacturer's requirements.

2. **Line tightness testing:** A periodic test of piping may be conducted only if it can detect a 0.1 gal/h leak one and one-half times the operating pressure.

3. **Applicable tank methods:** The methods outlined in A2 through A4 may be used if they are designed to detect a release from any portion of the underground piping that routinely contains regulated substances.

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Protocol for Conducting Environmental Compliance Audits of Storage Tanks under RCRA

Appendix D:
Financial Test of Self-Insurance
(40 CFR 280.95(a) through 280.95(d))

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Financial Test of Self-Insurance
(40 CFR 280.95(a) through 280.95(d))

To pass the financial test of self-insurance, the owner or operator, and/or guarantor must meet the criteria of option (A) or (B) of this appendix based on year-end financial statements for the latest completed fiscal year.

Option A

A1. The owner or operator, and/or guarantor, must have a tangible net worth of at least ten times:
- the total of the applicable aggregate amount required by 40 CFR 280.93, based on the number of USTs for which a financial test is used to demonstrate financial responsibility to U.S. EPA or to a state implementing agency under a state program approved by U.S. EPA under 40 CFR 281;
- the sum of the corrective action cost estimates, the current closure and post-closure care cost estimates, and amount of liability coverage for which a financial test is used to demonstrate financial responsibility to U.S. EPA under 40 CFR 264.101, 264.143, 264.145, 265.143, 265.145, 264.147, and 265.147 or to a state implementing agency under a state program authorized by U.S. EPA under 40 CFR 271; and
- the sum of current plugging and abandonment cost estimates for which a financial test is used to demonstrate financial responsibility to U.S. EPA under 40 CFR 144.63 or to a state implementing agency under a state program authorized by U.S. EPA under 40 CFR 145.

A2. The owner or operator, and/or guarantor, must have a tangible net worth of at least $10 million.

A3. The owner or operator, and/or guarantor, must have a letter signed by the chief financial officer worded as specified below.

A4. The owner or operator, and/or guarantor, must either:
- file financial statements annually with the U.S. Securities and Exchange Commission, the Energy Information Administration, or the Rural Electrification Administration; or
- report annually the firm's tangible net worth to Dun and Bradstreet, and Dun and Bradstreet must have assigned the firm a financial strength rating of 4A or 5A.

A5. The firm's year-end financial statements, if independently audited, cannot include an adverse auditor's opinion, a disclaimer of opinion, or a "going concern" qualification.

Option B

B1. The owner or operator, and/or guarantor must meet the financial test requirements of 40 CFR 264.147(f)(1), substituting the appropriate amounts specified in 40 CFR 280.93 (b)(1) and (b)(2) for the "amount of liability coverage" each time specified in that section.

B2. The fiscal year-end financial statements of the owner or operator, and/or guarantor, must be examined by an independent certified public accountant and be accompanied by the accountant's report of the examination.

B3. The firm's year-end financial statements cannot include an adverse auditor's opinion, a disclaimer of opinion, or a "going concern" qualification.

B4. The owner or operator, and/or guarantor, must have a letter signed by the chief financial officer, worded as specified below.

B5. If the financial statements of the owner or operator, and/or guarantor, are not submitted annually to the U.S. Securities and Exchange Commission, the Energy Information Administration or the Rural Electrification Administration, the owner or operator, and/or guarantor, must obtain a special report by an independent certified public accountant stating that:

- he has compared the data that the letter form the chief financial officer specifies as having been derived from the latest year-end financial statements of the owner or operator, and/or guarantor, with the amounts in such financial statements; and
- in connection with that comparison, no matters came to his attention which caused him to believe that the specified data should be adjusted.

Letter from Chief Financial Officer

To demonstrate that it meets the financial test, the chief financial officer of the owner or operator, or guarantor, must sign, within 120 days of the close of each financial reporting year, as defined by the 12-mo period for which financial statements used to support the financial test are prepared, a letter worded exactly as follows, except that the instructions in brackets are to be replaced by the relevant information and the brackets deleted:

> I am the chief financial officer of [insert: name and address of the owner or operator, or guarantor]. This letter is in support of the use of [insert: "the financial test of self-insurance," and/or "guarantee"] to demonstrate financial responsibility for [insert: "taking corrective action" and/or "compensating third parties for bodily injury and property damage"] caused by [insert: "sudden accidental releases" and/or "nonsudden accidental releases"] in the amount of at least [insert: dollar amount] per occurrence and [insert: dollar amount] annual aggregate arising from operating (an) UST(s).
>
> USTs at the following facilities are assured by this financial test or a financial test under an authorized state program by this [insert: "owner or operator," and/or "guarantor"]: [List for each facility: the name and address of the facility where tanks assured by this financial test are located, and whether tanks are assured by this financial test or a financial test under a state program approved under 40 CFR 281. If separate mechanisms or combinations of mechanisms are being used to assure any of the tanks at this facility, list each tank assured by this financial test or a financial test under a state program authorized under 40 CFR 281 by the tank identification number provided in the notification submitted pursuant to 40 CFR 280.22 or the corresponding state requirements.]
>
> A [insert: "financial test," and/or "guarantee"] is also used by this [insert: "owner or operator," or "guarantor"] to demonstrate evidence of financial responsibility in the following amounts under other U.S. EPA regulations or state programs authorized by U.S. EPA under 40 CFRs 271 and 145:

U.S. EPA Regulations	Amount
Closure (40 CFR 264.143 and 265.143)	$_____
Post-Closure Care (40 CFR 264.145 and 265.145)	$_____
Liability Coverage (40 CFR 264.147 and 265.147)	$_____
Corrective Action (40 CFR 264.101(b))	$_____
Plugging and Abandonment (40 CFR 144.63)	$_____
Closure	$_____
Post-Closure Care	$_____
Liability Coverage	$_____
Corrective Action	$_____
Plugging and Abandonment	$_____
Total	$_____

> This [insert: "owner or operator," or "guarantor"] has not received an adverse opinion, a disclaimer of opinion, or a "going concern" qualification from an independent auditor on his financial statements for the latest completed fiscal year.

[Fill in the information for Alternative I if the criteria of Option A are being used to demonstrate compliance with the financial test requirements. Fill in the information for Alternative II if the criteria of Option B are being used to demonstrate compliance with the financial test requirements.]

Alternative I

1. Amount of annual UST aggregate coverage being assured by a financial test, and/or guarantee	$_____
2. Amount of corrective action, closure and post-closure care costs, liability coverage, and plugging and abandonment costs covered by a financial test, and/or guarantees	$_____
3. Sum of lines 1 and 2	$_____
4. Total tangible assets	$_____
5. Total liabilities [if any of the amount reported on line 3 is included in total liabilities, you may deduct that amount from this line and add that amount to line 6]	$_____
6. Tangible net worth [subtract line 5 from line 4]	$_____

	Yes	No
7. Is line 6 at least $10 million?	___	___
8. Is line 6 at least 10 times line 3?	___	___
9. Have financial statements for the latest fiscal year been filed with the Securities and Exchange Commission?	___	___
10. Have financial statements for the latest fiscal year been filed with the Energy Information Administration?	___	___
11. Have financial statements for the latest fiscal year been filed with the Rural Electrification Administration?	___	___
12. Has financial information been provided to Dun and Bradstreet, and has Dun and Bradstreet provided a financial strength rating of 4A or 5A? [Answer "Yes" only if both criteria have been met.]	___	___

Alternative II

1. Amount of annual UST aggregate coverage being assured by a test, and/or guarantee	$_____
2. Amount of corrective action, closure and post-closure care costs, liability coverage, and plugging and abandonment costs covered by a financial test, and/or guarantee	$_____
3. Sum of lines 1 and 2	$_____
4. Total tangible assets	$_____
5. Total liabilities [if any of the amount reported on line 3 is included in total liabilities, you may deduct that amount from this line and add that amount to line 6]	$_____
6. Tangible net worth [subtract line 5 from line 4]	$_____

7. Total assets in the U.S. [required only if less than 90 percent of assets are located in the U.S.]	$_____	
	Yes	No
8. Is line 6 at least $10 million?	___	___
9. Is line 6 at least 6 times line 3?	___	___
10. Are at least 90 percent of assets located in the U.S.? [If "No," complete line 11.]	___	___
11. Is line 7 at least 6 times line 3?	___	___
[Fill in either lines 12-15 or lines 16-18:]		
12. Current assets	$_____	
13. Current liabilities	_____	
14. Net working capital [subtract line 13 from line 12]	_____	
	Yes	No
15. Is line 14 at least 6 times line 3?	___	___
16. Current bond rating of most recent bond issue	___	___
17. Name of rating service	___	___
18. Date of maturity of bond	___	___
19. Have financial statements for the latest fiscal year been filed with the SEC, the Energy Information Administration, or the Rural Electrification Administration?	___	___

[If "No," please attach a report from an independent certified public accountant certifying that there are no material differences between the data as reported in lines 4-18 above and the financial statements for the latest fiscal year.]

[

For both Alternative I and Alternative II complete the certification with this statement.]

I hereby certify that the wording of this letter is identical to the wording specified in 40 CFR 280.95(d) as such regulations were constituted on the date shown immediately below.

[Signature]
[Name]
[Title]
[Date]

Protocol for Conducting Environmental Compliance Audits of Storage Tanks under RCRA

Appendix E:
Schedule for Implementation of Air Emissions Standards (40 CFR 265.1082)

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Schedule for Implementation of Air Emissions Standards (40 CFR 265.1082)

Facilities existing on October 6, 1996, which are required to comply with 40 CFR 265, Subparts I, J, and K, shall:

- install and begin operation of all required control equipment by October 6, 1996. If it cannot be installed and operating by October 6, 1996, the owner and operator shall:
  - install and begin operation as soon as possible but not later than December 8, 1997
  - prepare an implementation schedule which is placed in the operating record by October 6, 1996.

Facilities which are required to comply with 40 CFR 265, Subparts I, J, and K due to a statutory or regulatory amendment shall:

- install and begin operation of all required control equipment by the effective date of the amendment. If it cannot be installed and operating by the effective date of the amendment the owner and operator shall:
  - install and begin operation as soon as possible but not later than 30 mo after the amendment effective date
  - prepare an implementation schedule which is placed in the operating record no later than the effective date of the amendment.

(NOTE: The Regional Administrator may elect to extend the implementation date at a facility on a case- by-case basis.)

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Protocol for Conducting Environmental Compliance Audits of Storage Tanks under RCRA

Appendix F:
Used Oil Classifications (40 CFR 279.10 and 279.11)

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Used Oil Classifications
(40 CFR 279.10 and 279.11)

Used Oils Which Are Required to be Handled According to the Requirements in 40 CFR 279 (40 CFR 279.10(b)(2)(ii), 279.10(b)(2)(iii), 279.10(b)(3), 279.10(c)(2), 279.10(d), 279.10(e)(2), and 279.10(i))

1. Used oil containing more than 1000 ppm of total halogens but the generator has demonstrated that the used oil does not contain hazardous waste.
2. Used metalworking oils/fluids containing chlorinated paraffins when they are recycled or disposed of and the generator has demonstrated that the used oil does not contain hazardous waste.
3. Used oils contaminated with CFCs that have been mixed with used oil from sources other than refrigeration units (or from refrigeration units but the unit is destined for reclamation) and the generator has demonstrated that the used oil does not contain hazardous waste.
4. Materials produced from used oil that are burned for energy recovery.
5. Mixtures of used oil and a characteristic hazardous waste if the resultant mixture does not exhibit any characteristics of hazardous waste.
6. Mixtures of used oil and a waste that is hazardous solely because it exhibits the characteristic of ignitability and is not a listed waste, provided that the mixture does not exhibit the ignitability characteristic.
7. Mixtures of used oil and conditionally exempt small quantity generator (CESQG) hazardous waste.
8. Mixtures of used oil and fuels or other fuel products, except those mixed on-site by the generator for use in the generators own vehicles if the used oil and the diesel fuel have been mixed.
9. Used oil burned for energy recovery and any fuel produced from used oil that exceeds the following allowable limits:

Arsenic	5 ppm maximum
Cadmium	2 ppm maximum
Chromium	10 ppm maximum
Lead	100 ppm maximum
Flash Point	100 °F minimum
Total halogens	4000 ppm maximum

10. Materials containing or otherwise contaminated with used oil that are burned for energy recovery.
11. Used oil drained or removed from materials containing or otherwise contaminated with used oil.
12. Used oil at marketers or burners with any quantifiable level of PCBs (the standards in 40 CFR 761.20(a) must also be met for this type of oil).

Used Oil that is Required to be Handled as a Hazardous Waste (40 CFR 279.10(b)).

1. Mixtures of used oil and listed hazardous waste.
2. Used oil containing more than 1000 ppm total halogens
3. Used metalworking oils/fluids containing chlorinated paraffins if processed through a tolling agreement.
4. Used oil contaminated with CFCs removed from refrigeration units where the CFCs are destined for reclamation.
5. Mixtures of used oil and hazardous waste if the resultant mixture exhibits characteristics of a hazardous waste.

Used Oil that is not Subject to the Requirements of 40 CFR 279, Nor is it to be Handled as a Hazardous Waste Unless Testing Indicates Hazardous Constituents (40 CFR 279.10(c)(1), 279.10(d)(2), 279.10(e)(1), 279.10(e)(3), 279.10(e)(4), and 279.10(f) through 279.10(h)).

1. Mixtures of used oil and diesel fuel mixed on-site by the generator of the used oil for use in the generator's own vehicles.
2. Materials that are reclaimed from used oil that are used beneficially and are not burned for energy recovery or used in a manner constituting disposal.
3. Materials derived from used oil that are disposed of or used in a manner constituting disposal.
4. Used oil re-refining distillation bottoms that are used as feedstock to manufacture asphalt products.
5. Wastewater discharges with de minimis quantities of used oil.
6. Used oil within a crude oil or natural gas pipeline.
7. Used oil on vessels.
8. Materials containing or otherwise contaminated with used oil from which the used oil has been properly drained or removed so that no signs of visible free-flowing remains.

Protocol for Conducting Environmental Compliance Audits of Storage Tanks under RCRA

Appendix G:
User Satisfaction Questionnaire and Comment Form

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User Satisfaction Survey
(OMB Approval No. 1860.01)
Expires 9/30/2001

We would like to know if this Audit Protocol provides you with useful information. This information will be used by EPA to measure the success of this tool in providing compliance assistance and to determine future applications and needs for regulatory checklists and auditing materials.

1. Please indicate which Protocol(s) this survey applies to:

   Title:_____

   EPA Document Number:_____

2. Overall, did you find the Protocol helpful for conducting audits:

   Yes ___ No___

   If not, what areas of the document are difficult to understand?

3. How would you rate the usefulness of the Protocol(s) for conducting compliance audits on a scale of 1-5?

   1 = not useful or effective, 3 = somewhat useful/effective, 5 = very useful/effective

Low		Medium		High	
1	2	3	4	5	Introduction Section
1	2	3	4	5	Key Compliance Requirements
1	2	3	4	5	Key Terms and Definitions
1	2	3	4	5	Checklist

4. What actions do you intend to take as a result of using the protocol and/or conducting the audit? Please check all that apply.

   ____ Contact a regulatory agency
   ____ Contact a compliance assisstance provider (e.g., trade association, state agency, EPA)
   ____ Contact a vendor
   ____ Disclose violations discovered during the audit under EPA's audit Policy
   ____ Disclose violations discovered under EPA's Small Business Policy
   ____ Obtain a permit or certification
   ____ Change the handling of a waste, emission or pollutant
   ____ Change a process or practice
   ____ Purchase new process equipment
   ____ Install emission control equipment (e.g., scrubbers, wastewater treatment)
   ____ Install waste treatment system (control technique)
   ____ Implement or improve pollution prevention practices (e.g., source reduction, recycling)
   ____ Improve organizational auditing program
   ____ Institute an Environmental Management System
   ____ Improve the existing Environmental Management System (e.g., improve training, clarify standard operating procedures, etc.)
   ____ Other _____

5. What, if any, environmental improvements will result from the actions to be taken (check all that apply)?

____ reduced emissions
____ waste reduction
____ reduced risk to human health and the environment due to better management practices
____ reduced quantity and toxicity of raw materials
____ water conservation
____ energy conservation
____ conserved raw materials
____ conservation of habitat or other environmental stewardship practice: _____
____ other: _____
____ no environmental improvements are likely to result from the use of this document

6. How did you hear about this document?
____ trade association
____ state technical assistance provider
____ EPA internet homepage or website
____ document catalog
____ co-worker or business associate
____ EPA, state, or local regulator
____ other (please specify) _____

7. In order to understand your response, we would like to know what function you perform with respect to environmental compliance and the size of your organization.

____ Company Personnel
- ____ Environmental Auditor
- ____ Corporate Level
- ____ Plant-level
- ____ Legal
- ____ Environmental Manager
- ____ Operator - (e.g., Pollution Control Equipment
- ____ Other: _____

____ Trade Association
- ____ National
- ____ Regional
- ____ Local
- ____ Manager
- ____ Information Specialist

____ Compliance Assistance Provider
- ____ EPA
- ____ State
- ____ State Small Business Assistance
- ____ Local
- ____ Other _____

____ Regulatory Personnel
- ____ State
- ____ Local
- ____ EPA

____ Vendor/Consultant
- ____ Environmental Auditor
- ____ Environmental Engineer/Scientist
- ____ Attorney

8. How many employees are located at your facility (including full-time contractors?)

___ 0 - 9 ___ 10 - 49 ___ 50 - 100 ___ 101-500 ___ More than 500

Optional (Please Print)

Name: _____ Address: _____

Title: _____ City: _____ State: _____

Zip code: _____

Organization Name: _____

Phone: ( ) _____ E-mail: _____

Please return all pages (1 thru 3) of this survey by folding pages 1 and 2 into page 3 and using the preprinted, pre-stamped address on the reverse side of page 3. If you have accessed this document electronically from one of EPA's web sites, simply e-mail this questionnaire to: satterfield.richard@epa.gov.

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