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Civil Engineer

STORAGE TANK COMPLIANCE



COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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This Air Force Instruction implements Air Force Policy Directive 32-70, *Environmental Quality*. It identifies compliance requirements for underground and aboveground storage tanks and associated piping that store petroleum and hazardous substances except hazardous waste. In the United States and US territories, use this guidance with applicable Federal, state, and local standards for storage tanks. (See AFI 32-7006, *Environmental Program in Foreign Countries*, for storage tank compliance requirements at installations outside the United States and its territories.)

Use this instruction with AFI 23-204, *Organizational Fuel Tanks*; Technical Order (T.O.) 37-1-1, *General Operation and Inspection of Installed Fuel Storage and Dispensing Systems*; and Air Force Manual (AFMAN) 23-110, volume I, part 3 (formerly AFM 67-1).

SUMMARY OF REVISIONS

This is a new instruction supporting AFPD 32-70.

Chapter 1

HOW TO USE THIS INSTRUCTION

1.1. Applicable Standards and Regulations. Use the procedures in this instruction to comply with applicable Federal, state, and local standards for underground storage tanks (UST) and aboveground storage tanks (AST).

1.1.1. For USTs, refer to Federal standard is Title 40, Code of Federal Regulations, part 280 (40 CFR 280).

1.1.2. For ASTs, note that the Federal standard is being developed. This instruction will be updated when the Federal AST standard is published.

1.1.3. Follow the more protective standard if state or local compliance requirements are more protective than the Federal standards.

1.1.4. Note that Air Force activities in foreign countries must manage tanks to comply with the Final Governing Standards or, in their absence, the *Overseas Environmental Baseline Guidance* document.

1.2. Concept:

1.2.1. This instruction is intended to provide major commands (MAJCOM) and installations a framework for complying with environmental standards applicable to storage tanks.

1.2.2. MAJCOMs provide additional implementing guidance in their supplemental publications to this instruction. MAJCOM supplements must identify the specific "actors" who have implementing responsibility and include any "how to" guidance needed to comply.

1.3. Responsibilities:

1.3.1. HQ USAF:

1.3.1.1. The Assistant Secretary of the Air Force for Manpower, Reserve Affairs, Installations, and Environment (SAF/MI):

- Promulgates and oversees policy for storage tank compliance.
- Is the principal Air Force representative on storage tank compliance-related issues with the Office of the Secretary of Defense (OSD) staff, Federal agencies, and the Congress.
- Coordinates Air Force storage tank compliance efforts with those of other Services to explore common areas of interest and prevent duplication of effort.

1.3.1.2. The Civil Engineer (HQ USAF/CE):

- Formulates policy, allocates resources, and oversees execution of storage tank compliance programs throughout the Air Force.
- Coordinates the Air Force storage tank compliance program with other HQ USAF offices.
- Evaluates the performance of storage tank compliance programs throughout the Air Force and reports results to SAF/MI, MAJCOMs, and appropriate field operating agencies (FOA).

- Validates and supports storage tank compliance requirements throughout the Air Force in the planning, programming, and budgeting system (PPBS).
- Designates lead MAJCOMs or FOAs for special projects and studies on storage tank compliance.
- Validates storage tank research and development (R&D) requirements that MAJCOMs identify.
- Assigns validated R&D requirements to Air Force Materiel Command (AFMC).

1.3.1.3. The Judge Advocate General (HQ USAF/JA):

- Provides legal advice on all aspects of the storage tank compliance program through the Air Force Legal Services Agency, Environmental Law and Litigation Division (AFLSA/JACE).
- Gives legal advice on regional storage tank compliance issues through AFLSA/JACE legal staff at each Regional Compliance Office.

1.3.1.4. The Surgeon General (HQ USAF/SG):

- Advises HQ USAF/CE on health matters related to storage tanks.
- Coordinates bioenvironmental engineering support for the storage tank compliance program with HQ USAF/CE, SAF/MI, and MAJCOMs.
- Aligns requirements of this AFI with AFIs issued by HQ USAF/SG.

1.3.1.5. Deputy Chief of Staff, Logistics (HQ USAF/LG):

- Is the office of primary responsibility for issues concerning the storage of bulk petroleum products on Air Force installations.
- Coordinates these issues with the Defense Fuel Supply Center (DFSC) of the Defense Logistics Agency.
- Issues guidelines for managing organizational fuel tanks.

1.3.2. Field Operating Agencies:

1.3.2.1. Air Force Civil Engineer Support Agency (AFCESA). AFCESA provides technical assistance to bases regarding facilities, utilities, infrastructure, and Civil Engineer Squadron organization and maintenance management.

1.3.2.2. Air Force Center for Environmental Excellence (HQ AFCEE):

- Provides comprehensive storage tank compliance services to Air Force commanders in the field to help them:
- Determine permit and variance requirements, obtain data, and complete storage tank permit applications.
- Develop and provide required preconstruction and construction permit applications for storage tank projects using military construction funds and pay related fees from the projects' funds.
- Identify compliance requirements for new construction by coordinating new projects or modifications with appropriate EPA regional, state, or local offices.

- Maintains information on the locations and physical characteristics of Air Force storage tanks, including key features of variances and compliance orders.
- Monitors report and permit requirements to meet Federal and state storage tank compliance regulations.
- Advises HQ USAF/CE on the effects of new requirements on the Air Force.
- Maintains and reports compliance status of all UST violations to SAF/MIQ and HQ USAF/CE through the Regional Compliance Offices.

1.3.2.3. Armstrong Laboratory (AL). AL provides:

- Technical documents and advice on human health issues and standards.
- Model health and safety plans.
- Environmental sampling and analysis protocols.
- Worker health and safety standards.
- Entry procedures for confined spaces.
- Health risk assessments
- Storage tank compliance R&D to meet MAJCOM requirements.

1.3.3. MAJCOMs. MAJCOMs provide execution guidance and oversee implementation of storage tank compliance programs at their installations. All references to MAJCOMs in this AFI include the Air National Guard Readiness Center (ANGRC) and other agencies designated as "MAJCOM equivalent" by HQ USAF.

1.3.3.1. Civil Engineer:

- Writes directives to implement this instruction.
- Identifies R&D requirements for storage tank compliance.
- Evaluates storage tank compliance programs at their bases.
- Identifies, requests, and allocates resources for storage tank compliance programs at their bases.
- Helps bases in their command comply with applicable Federal, state, and local storage tank requirements.

1.3.3.2. Surgeon:

- Provides occupational surveillance; health risk assessment; and environmental sampling, analysis, and monitoring to support storage tank compliance programs at their bases.
- Identifies environmental sampling, analysis, and monitoring resource requirements needed to support storage tank compliance programs at their bases.

Chapter 2

COMPLIANCE REQUIREMENTS FOR UNDERGROUND STORAGE TANKS AND ASSOCIATED PIPING

2.1. Initial Considerations. MAJCOMs and installations consider these factors before retaining or installing USTs:

2.1.1. Address Federally Unregulated USTs. Even though the EPA does not regulate certain types of storage tanks, state or local regulatory agencies may regulate some of them.

2.1.1.1. See 40 CFR 280.12 for definitions of tanks that are not USTs and therefore not subject to Federal regulations.

2.1.1.2. Note that 40 CFR 280.10 excludes and defers certain USTs from Federal requirements.

- Even though they are deferred from most compliance requirements, deferred USTs must meet release reporting and corrective action requirements.
- Install new deferred USTs to prevent releases caused by corrosion or structural failure. Follow the appropriate national codes at **Attachment 3**.

2.1.2. Eliminate USTs Where Possible. Eliminating USTs reduces longterm operating and management costs and future liabilities resulting from leaks. Eliminate USTs by:

- Locating tanks in vaults.
- Constructing aboveground tanks.
- Revising operating practices.

2.1.3. Assess Risks. Use risk assessment to evaluate USTs and set up repair or upgrade schedules. **Attachment 2** presents a simple risk assessment model that assigns a numerical score to each UST on a base. The risk assessment model is also available in automated form from AFCESA/EN and in the *Work Information Management System--Environmental Subsystem (WIMS--ES)*. A risk assessment score of 80 or higher suggests removing or replacing the UST.

2.1.4. Analyze Costs. Consider these factors in your cost analyses:

2.1.4.1. Balance the costs of upgrading tanks against the cost of replacing them.

2.1.4.2. Add the recurring costs of testing tanks. Upgrading or replacing USTs well before the 1998 deadline can lower costs by reducing testing requirements.

2.1.4.3. Consider installing permanent release -detection systems as soon as possible. The chance of UST failure increases with age, and many Air Force USTs are more than 25 years old.

2.1.5. Permits and Fees. Determine if state and local regulatory agencies require permits for USTs or charge registration and permit fees.

2.2. UST Inventories. MAJCOMs and installations use WIMS-ES to develop and maintain a comprehensive list of tank and piping locations and characteristics to accurately track and report UST compliance status. Refer to AFI 32-7002, *Environmental Information Management System*, for guidelines on using WIMS-ES. Update WIMS-ES UST data when you remove, replace, or upgrade USTs and when you find or remove abandoned USTs.

2.3. New Petroleum UST Systems. MAJCOMs and installations ensure USTs and piping are designed and constructed to provide:

- Corrosion protection.
- Release detection.
- Spill and overfill prevention.
- Proper installation.
- Double walls or other secondary containment (optional for petroleum USTs, but recommended).

2.3.1. Meeting Performance Standards for New USTs. Install tanks and piping according to the appropriate national codes in **Attachment 3**.

2.3.1.1. Corrosion Protection for USTs. Prevent corrosion by installing tanks made of:

- Fiberglass-reinforced plastic.
- Cathodically protected steel.
- Steel-fiberglass-reinforced plastic composite.

2.3.1.2. Corrosion Protection for Piping. Use fiberglass-reinforced plastic or cathodically protected steel. See **Attachment 3** for national codes.

2.3.2. Release Detection. Install new USTs with at least 1 of these release detection monitoring systems:

- Automatic tank gauging.
- Vapor monitoring.
- Groundwater monitoring.
- Interstitial monitoring with secondary containment (double-walled tanks).
- Other effective methods that comply with environmental regulations.

2.3.2.1. Install automatic line-leak detection with all new piping, including piping for deferred tanks.

2.3.2.2. Suction piping that drains the contents back into the tank, with a single check valve below the suction pump, does not require release detection. Suction piping that does not meet these design criteria must use a release detection monitoring system in paragraph 2.3.2. Follow the appropriate codes in **Attachment 3**.

2.3.3. Spill and Overfill Prevention. Install equipment that will prevent spills when the transfer hose detaches. Control overfilling by using an automatic shutoff.

2.3.4. Notifying Regulatory Agencies and Obtaining Certification. Follow these guidelines:

- Get the proper notification and certification forms from the regulatory agency.
- Notify the appropriate regulatory agency of all USTs.
- Note that 40 CFR 280 requires that you notify the regulatory agency within 30 calendar days after you begin using a newly installed UST. Certify that the UST and the piping were installed properly.
- Notify the regulator in advance when you cannot meet a regulatory deadline.

- Where required, send state or local agencies a notice of intent to install USTs before starting construction.

2.4. Existing Petroleum UST Systems. An "existing UST" is any regulated UST installed before 22 December 1988. By 22 December 1998, all existing USTs and piping must meet the standards for new USTs and piping in paragraph 2.3. An internal lining instead of cathodic protection may be used to upgrade steel tanks. Internal linings must meet the standards in **Attachment 3**. They require an inspection within 10 years of installation and every 5 years thereafter.

2.4.1. Replacing Small Tanks. Replace rather than upgrade existing tanks that hold less than 1,000 gallons.

2.5. Hazardous Substance UST Systems. In addition to the requirements described in this instruction for new petroleum UST systems (paragraph 2.3.), UST systems for hazardous substances must have secondary containment.

2.5.1. Meet secondary containment requirements by using:

- Double-walled tanks and piping.
- Liners.
- Vaults.

2.5.2. Line USTs containing hazardous substances with materials that meet code requirements (see **Attachment 3**) and are compatible with the stored substance.

2.5.3. Follow 40 CFR 265 for UST systems containing hazardous waste.

2.6. Monitoring for Releases. Installations periodically check UST systems for leaks.

2.6.1. New USTs. Check new USTs for leaks at least every 30 days using the selected releasedetection system (paragraph 2.3.2.).

2.6.2. Existing USTs. Determine monitoring requirements for USTs installed before December 1988 according to these three categories:

2.6.2.1. Nonupgraded USTs. Use monthly inventory controls and conduct annual tightness testing. USTs containing petroleum products must meet the inventory control requirements in T.O. 37-1-1 and AFM 23-110, volume I, part 3. For tanks smaller than 2,000 gallons, you may use manual tank gauging rather than monthly inventory controls.

2.6.2.2. Upgraded USTs Without Release Detection Systems. For USTs that meet the requirements in paragraph 2.3. but lack a release detection monitoring system, use monthly inventory controls and conduct tightness testing at least every 5 years from the time the tank was upgraded. You must install a release detection monitoring system by 22 December 1998.

2.6.2.3. Fully Upgraded USTs. Fully upgraded USTs must meet the monitoring standards in paragraph 2.5.1.

2.6.3. New and Existing Pressurized Piping. Equip pressurized piping with automatic line leak detectors. Perform a line tightness test annually or monitor this piping monthly using a release detection monitoring method that detects piping leaks.

2.6.4. New and Existing Suction Piping. Perform a line tightness test at least every 3 years or use a monthly monitoring method that detects piping leaks.

2.7. Operating and Maintaining USTs:

2.7.1. Spill and Overfill Control. To prevent spills:

- Make sure that available tank capacity exceeds the volume of the product.
- Monitor the transfer operation constantly.

2.7.2. Corrosion Protection:

2.7.2.1. Have a qualified cathodic protection specialist inspect new cathodic protection systems within 6 months of installation and at least every 3 years thereafter.

2.7.2.2. Inspect impressed current systems every 60 calendar days.

2.7.3. Repairs. Follow these guidelines:

- Use qualified technicians to repair and certify USTs according to national codes and standards (see **Attachment 3**).
- Perform tightness testing within 30 calendar days of completing repairs.
- Test a cathodic protection system within 6 months after repair. Thereafter, follow the guidelines in paragraph **2.7.2**.

2.8. Release Response, Cleanup, and Reporting:

2.8.1. Responding to Releases:

2.8.1.1. If you suspect the release of a material stored in a UST, take immediate action to investigate and confirm the release.

2.8.1.2. If you suspect a leaking UST, perform a tightness test of the system. If you suspect a release because of environmental contamination but you can't detect a leak, perform a site check by sampling and measuring for contamination at the UST site.

2.8.1.3. If you confirm a release:

- Remove regulated substances from the UST system.
- Prevent further environmental damage.
- Identify and mitigate fire, explosion, and vapor hazards.

2.8.2. Cleaning Up Releases. Coordinate these actions with regulatory authorities:

2.8.2.1. Removing Free Product. If you confirm the presence of free product outside the UST, remove it as soon as possible.

2.8.2.2. Investigating Soil and Groundwater. Determine the extent and location of contaminated soil and groundwater. Comply with requests from the regulatory agency for additional information or a corrective action plan to clean up contaminated soil and groundwater.

2.8.2.3. Site Remediation. Remediate contaminated UST sites to fully protect human health, safety, and the environment. If the regulator agency approves, you may begin cleanup actions

before you complete the corrective plan. Dispose of contaminated soil and other cleanup waste according to Federal and state regulations.

2.8.3. Reporting Releases:

2.8.3.1. Release Notification. Notify the regulatory agency immediately (within 24 hours per 40 CFR 280) if:

- You discover a release.
- Unusual conditions occur, such as apparent erratic behavior of equipment, loss of product, or unexplained water in tanks.
- A spill or overflow of more than 25 gallons occurs, causes a sheen on nearby surface water, or otherwise equals or exceeds the reportable quantity for the spilled substance.

2.8.3.2. Notification. Notify HQ USAF/CEV of the release according to AFI 32-4002, *Hazardous Material Emergency Planning and Response Compliance*, and AFI 32-7002, *Environmental Information Management System*.

2.8.3.3. Release Reporting. Unless the regulatory agency directs otherwise, submit a report of initial abatement actions (paragraph **2.8.1.3.**) promptly after confirming a release (40 CFR 280 requires this report to be sent within 20 calendar days. Submit a detailed followup report soon after confirming the release. Title 40 CFR 280 requires that this report be submitted within 45 calendar days and that it include:

- Name of the installation point of contact.
- Nature and estimated quantity of release.
- Information on surrounding population, water quality, use and locations of potentially affected wells, subsurface soil conditions, locations of sewers, climatological conditions, and land use.
- Results of initial site check (paragraph **2.8.1.2.**).
- Cause of release.
- Results of free-product investigation, including:
 - Estimated quantity, type, and depth of any free product.
 - Type of recovery system.
 - Location of on-site or off-site discharges.
 - Type of treatment and effluent quality
 - Steps taken to obtain the necessary permits.
 - How personnel disposed of or plan to dispose of any recovered free product, contaminated soil, or groundwater.

2.9. Closing USTs:

2.9.1. Temporary Closure. When a UST is temporarily removed from service, installations continue to operate and maintain corrosion protection systems and, if the UST is not empty, release detection systems. If the UST will be out of service for 3 months or more, leave vent lines open and cap and secure other lines, pumps, manways, and equipment. Don't temporarily close a UST system for more than 12 months unless one of these conditions is met:

- The UST meets the standards in 2.3, paragraph 2.3, except that spill and overflow prevention are not required.
- The regulatory agency approves an extension.

2.9.2. Permanent Closure. Notify the regulatory agency as soon as possible before permanently closing a UST or effecting a change in service (40 CFR 280 requires a 30-day advance notice). Determine if the UST leaked by measuring for a release where contamination is most likely, unless an external release detection method reliably shows no release occurred.

2.9.2.1. If you discover a release, begin corrective action according to 2.8, paragraph 2.8.

2.9.2.2. If you find no release, empty and clean the tank of all liquid and sludge.

2.9.2.3. You may close a UST in place by filling it with an inert solid material if it is immediately adjacent to or below an existing structure or deeply buried.

2.9.2.4. In most cases, you should remove USTs because USTs closed in place continue to require management attention. Follow API Recommended Practice 1604, *Removal and Disposal of Used Underground Petroleum Storage Tanks*.

2.10. Recordkeeping:

2.10.1. Keep these records readily available for inspection at the environmental flight or environmental management office:

- UST inventory (paragraph 2.2.).
- Documentation of:
- Corrosion protection equipment operation and inspection.
- UST system repairs.
- Recent compliance with release detection requirements.
- The results of the site investigation conducted during permanent closure.
- Leak reports.

2.10.2. Note that the Base Fuels Management Office (BFMO) maintains inventory control records and keeps them available for inspection.

2.11. Budgeting for USTs. See AFI 32-7001, *Environmental Budgeting*, for guidelines on budgeting for UST-related costs.

2.11.1. The Defense Fuel Supply Center (DFSC) funds all operation and maintenance (O&M) and environmental-related costs for USTs holding DLA--owned fuel.

2.11.2. In FY 95, DFSC funding responsibilities will extend to hydrant systems.

2.11.3. Installations provide requirements to DFSC through the MAJCOM.

2.12. Hydrant Fueling Systems. Although Federal regulations currently defer hydrant systems, installations should leak test these systems periodically because of their demonstrated high potential for leaking and causing groundwater contamination.

2.12.1. Use a method such as an annual hydrostatic pressure test.

- 2.12.2. Coordinate local procedures with the BFMO in areas under BFMO control.
- 2.12.3. Comply with rules for hydrant systems set by states and local agencies.
- 2.12.4. Install automatic release detection systems and line leak detectors on all new hydrant systems.

2.13. AAFES Service Station USTs:

2.13.1. Installations care for UST systems at AAFES service stations as necessary, including:

- Inspecting.
- Maintaining.
- Repairing.
- Upgrading.
- Cleaning up leaks.
- Reporting spills and releases.
- Keeping records.

2.13.2. AAFES provides funds to install new USTs and cleans up fuel spills that occur during AAFES fuel operations.

Chapter 3

COMPLIANCE REQUIREMENTS FOR ABOVEGROUND STORAGE TANKS

3.1. Initial Considerations:

- 3.1.1. Although EPA has not issued regulations that specifically address aboveground storage tanks (AST), the Air Force must address AST requirements in its environmental programs.
- 3.1.2. State and local agencies may regulate ASTs. Installations must comply with state and local AST requirements.

3.2. AST Inventories. Maintain a list of all AST locations and characteristics.

3.3. Maintaining Compliance:

- 3.3.1. Make sure that ASTs containing petroleum products comply with T.O. 37-1-1.
- 3.3.2. Obtain all required environmental permits, including permits for:
 - Constructing and operating POL ASTs.
 - Stormwater discharges from diked areas and oil/water separators.

3.3.3. Preventing and Responding to Spills:

- 3.3.3.1. Provide ASTs with drainage or diking to prevent any accidental discharges from endangering adjoining property or reaching waterways.
- 3.3.3.2. Construct drainage and diking according to 29 CFR 1910.106.
- 3.3.3.3. Make sure that all ASTs are covered in hazardous material (HAZMAT) plans per AFI 32-4002, *Hazardous Material Emergency Planning and Response Compliance*.

3.3.4. Reporting and Cleaning Up Spills:

- 3.3.4.1. Report AST spills to Federal, state, and local regulators per AFI 32-4002, *Hazardous Material Emergency Planning and Response Compliance*, and to HQ USAF per AFI 32-7002, *Environmental Information Management System*.
- 3.3.4.2. Clean up leaks and spills per AFI 32-4002. Determine if spill residues meet criteria for hazardous waste. Dispose of the residues as required by Federal, state, and local requirements.

3.3.5. Testing for Leaks. Perform periodic leak tests where required.

3.4. Budgeting for ASTs:

- 3.4.1. DFSC funds all O&M and environmental costs for ASTs at bulk-fuel storage areas holding DLA fuel. In FY 95, these funding responsibilities will extend to hydrant systems.

3.4.2. Installations send requirements to DFSC through the MAJCOM. For non-DLA ASTs, identify environmental budget requirements according to AFI 32-7001, *Environmental Budgeting*.

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Attachment 1

ABBREVIATIONS, ACRONYMS, AND TERMS

Abbreviations and Acronyms

AAFES—Army and Air Force Exchange Service

AFCEE—Air Force Center for Environmental Excellence

AFCESA—Air Force Civil Engineer Support Agency

AFI—Air Force Instruction

AFM—Air Force Manual

AFMC—Air Force Materiel Command

AFPD—Air Force Policy Directive

AST—Aboveground storage tank

BFMO—Base Fuels Management Office

CE—Civil Engineer

CFR—Code of Federal Regulations

DFSC—Defense Fuel Supply Center

DLA—Defense Logistics Agency

EPA—U.S. Environmental Protection Agency

FOA—Field Operating Agency

HAZMAT—Hazardous material

MAJCOM—Major Command

OCR—Office of coordinating responsibility

O&M—Operation and maintenance

OSD—Office of the Secretary of Defense

PPBS—Planning, programming, and budgeting system

R&D—Research and development

SAF/MI—Assistant Secretary of the Air Force for Manpower, Reserve Affairs, Installations, and Environment

SG—Surgeon General

UST—Underground storage tank

WIMS-ES—Work Information Management System--Environmental Subsystem

Terms

Cathodic Protection.—A technique for preventing corrosion of a metal surface by making the surface the cathode of an electrochemical cell. A tank system can be cathodically protected by applying either galvanic anodes or impressed current.

Change-In-Servic—Continued use of an UST system to store an unregulated substance.

Existing UST.—A tank system containing a regulated substance that was installed on or before 22 December 1988.

Free Product.—A regulated substance that exists as a nonaqueousphase liquid (a liquid that does not dissolve in water).

New UST.—A tank system containing a regulated substance that was installed after 22 December 1988.

Overfill Release.—A release occurring when someone attempts to fill a tank beyond its capacity, resulting in discharging the regulated substance to the environment.

Petroleum UST.—A tank system containing petroleum or a petroleum mixture, including:

- Motor fuels.
- Jet fuels.
- Fuel oils.
- Lubricants.
- Petroleum solvents.
- Used oils.

Regulated Substance:—

- **Petroleum**, including crude oil or any crude oil mixture that remains a liquid at standard temperatures and pressures. "Regulated substances" include petroleum and petroleum-based substances composed of a complex blend of hydrocarbons derived from crude oil through separation, conversion, upgrading, and finishing, such as:
 - Motor fuels.
 - Jet fuels.
 - Distillate fuel oils.
 - Residual fuel oils.
 - Lubricants.
 - Petroleum solvents.
 - Used oils.
- **Any hazardous substance** defined in section 101(14) of the *Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)* of 1980, but not including any substance regulated as a hazardous waste under subtitle C of the *Resource Conservation and Recovery Act (RCRA)* of 1976.

Release.—Spilling, leaking, emitting, discharging, escaping, leaching, or disposing of a substance from an underground storage tank (UST) into groundwater, surface water, or soil.

Release Detection.—Determining if a UST system has released a regulated substance into the environment or into the interstitial space between a UST system and its secondary barrier or secondary containment area. Common releasedetection methods include:

- **Inventory Control.** A physical accounting system in which records are kept of input, output, and daily tank inventories, including:
 - **Manual Tank Gauging.** Measuring a tank's liquid level at the beginning and end of a 36-hour time period and calculating the change in volume. Limited to 550-gallon or smaller USTs when manual tank gauging is used alone.
 - **Tank-Tightness Testing.** One of several technologies that can measure very small changes in product volume to find a leak. You must adjust the results for temperature, structural deformation, trapped air, and so on.
 - **Automatic Tank Gauging.** Collecting releasedetection and inventory information by continuously monitoring the product level.
- **Nonvolumetric Tank-Tightness Testing.** Includes a variety of methodologies that apply to piping and tanks of any size. Some involve injecting a tracer gas for monitoring the presence of a release outside the tank. Others track the sound of product or bubbles leaving the tank.
- **Secondary Containment with Interstitial Monitoring.** Detects product in the space between the wall of the tank and the secondary containment liner or wall. Applies to piping and tanks of any size.
- **Groundwater Monitoring.** Detects regulated substances in groundwater. The substance must be immiscible in water and have a specific gravity less than 1.0. Applies to piping and tanks of any size.
- **Vapor Monitoring.** Detects fuel vapors in soil above the groundwater table. This test is not always reliable. Applies to tanks of any size and piping.

Storage Tank.—A stationary device that contains an accumulation of regulated substances.

Underground Storage Tank (UST).—Any tank or combination of tanks (including underground pipes connected to the tank) that contains an accumulation of regulated substances, where 10 percent or more of the volume (including underground pipes connected to the tank) lies beneath the ground surface.

UST System or Tank System.—An underground storage tank, connected underground piping, underground ancillary equipment, and any containment system.

Attachment 2

UST RISK ASSESSMENT MODEL

Tank Number _____
 Facility Number _____
 Facility Name _____
 Product Stored _____
 Capacity (Gal) _____
 Date Installed _____
 Date Rated _____ Rater _____

POTENTIAL FOR TANK or PIPELINE LEAKAGE

FACTOR	RATING (0-3)	FACTOR MULTIPLIER	FACTOR SCORE
Age	—	4	—
Size	—	3	—
Corrosion Potential	—	5	—
Maintenance History	—	4	—
Prior Leak Testing	—	3	—
	—	Subscore	—

POTENTIAL IMPACT OF LEAK

FACTOR	RATING (0-3)	FACTOR MULTIPLIER	FACTOR SCORE
Tank Contents	—	4	—
Depth to Groundwater	—	4	—
Distance to Potable Water Source	—	6	—
Distance to Base Boundary	—	3	—
Distance to Surface Water	—	2	—
		Subscore	—
		Total Score	—
		Max Possible	114

FACTOR	0	1	2	3
Age	0-2 yrs	2-10 yrs	10-20 yrs	+20 yrs
Size	---	<1000 gal	1000-9000 gal	>9000 gal
Corrosion Potential	Non-metallic	Protected Steel w/Cath Prot	Protected Steel w/o Cath Prot	Unprotected Steel w/o Cath Prot
Maintenance History	Good Inventory No History of Leak/Corr	Fair Inventory No History of Leak/Corr	No Inventory No Check on Leak/Corr	No Inventory History of Leak/Corr
Prior Leak Testing	0-2 yrs No Leaks	2-5 yrs No Leaks	No Record but No Leak Suspected	No Record but Leak is Suspected
Tank Contents	---	#2-#6 Fuels	MOGAS/JP-4	Solvents/Haz Chemicals
Depth to Ground- water	>200 ft	100-200 ft	20-100 ft	<20 ft
Distance to Potable Water Source	>5000 ft	2000-5000 ft	500-2000 ft	<500 ft
Distance to Base Boundary	>5000 ft	2000-5000 ft	500-2000 ft	<500 ft
Distance to Surface Water	>2000 ft	1000-2000 ft	500-1000 ft	<500 ft

Attachment 3

NATIONAL CODES AND STANDARDS

A3.1. Fiberglass-Reinforced Plastic Tanks:

- Underwriters Laboratories: Standard 1316, *Standard for GlassFiberReinforced Plastic Underground Storage Tanks for Petroleum Products*
- American Society of Testing and Materials: Standard D4021-86, *Standard Specification for GlassFiberReinforced Polyester Underground Petroleum Storage Tanks*

A3.2. Corrosion Protection Systems and Interior Linings:

- Steel Tank Institute: *Specification for STIP3 System of External Corrosion Protection of Underground Steel Storage Tanks*
- Underwriters Laboratories:
 - Standard 1746, *Corrosion Protection Systems for Underground Storage Tanks*
 - Standard 58, *Standards for Steel Underground Tanks for Flammable and Combustible Liquids*
- National Association of Corrosion Engineers:
 - Standard RP-02-85, *Control of External Corrosion on Metallic Buried, Partially Buried, or Submerged Liquid Storage Systems*
 - Standard RP-01-69, *Control of External Corrosion on Submerged Metallic Piping Systems*
- American Petroleum Institute:
 - Publication 1631, *Recommended Practice for the Interior Lining of Existing Steel Underground Storage Tanks*
 - Publication 1632, *Cathodic Protection of Underground Petroleum Storage Tanks and Piping Systems*
- National Leak Prevention Association: Standard 631, *Spill Prevention, Minimum TenYear Life Extension of Existing Steel Underground Tanks by Lining Without the Addition of Cathodic Protection*

A3.3. Steel-Fiberglass-Reinforced-Plastic Composite:

- Underwriters Laboratories: Standard 1746, *Corrosion Protection Systems for Underground Storage Tanks*
- Association for Composite Tanks: ACT-100, *Specification for the Fabrication of FRP Clad Underground Storage Tanks*

A3.4. Fiberglass-Reinforced-Plastic Piping:

- Underwriters Laboratories:
 - Standard 971, *UL Listed NonMetal Pipe*
 - Standard 567, *Pipe Connectors for Flammable and Combustible and LP Gas*

A3.5. Tank and Piping System Installation:

- American Petroleum Institute: Publication 1615, *Installation of Underground Petroleum Storage System*
- Petroleum Equipment Institute: Publication RP100, *Recommended Practices for Installation of Underground Liquid Storage Systems*
- American National Standards Institute:
 - Standard B31.3, *Petroleum Refinery Piping*
 - Standard B31.4, *Liquid Petroleum Transportation Piping System*
- National Fire Protection Association: Standard 30, *Flammable and Combustible Liquids Code*

A3.6. Spill and Overfill Control:

- American Petroleum Institute: Publication 1621, *Recommended Practice for Bulk Liquid Stock Control at Retail Outlets*
- National Fire Protection Association: Standard 30, *Flammable and Combustible Liquids Code*

A3.7. Compatibility:

- American Petroleum Institute:
 - Publication 1626, *Storing and Handling Ethanol and Gasoline/Ethanol Blends at Distribution Terminals and Service Stations*
 - Publication 1627, *Storage and Handling of Gasoline- Methanol/Cosolvent Blends at Distribution Terminals and Service Stations*

A3.8. Allowed Repairs:

- National Fire Protection Association: *Standard 30, Flammable and Combustible Liquids Code*
- American Petroleum Institute:
 - Publication 2200, *Repairing Crude Oil, Liquefied Petroleum Gas, and Product Pipelines*
 - Publication 1631, *Recommended Practice for the Interior Lining of Existing Steel Underground Storage Tanks*
- National Leak Prevention Association: *Standard 631, Spill Prevention, Minimum 10 Year Life Extension of Existing Steel Underground Tanks by Lining Without the Addition of Cathodic Protection*

A3.9. Water Level Measurement:

- American Petroleum Institute: Publication 1621, *Recommended Practice for Bulk Liquid Stock Control at Retail Outlets*

A3.10. Double-Walled Tanks:

- Steel Tank Institute: *Standard for Dual Wall Underground Storage Tanks Cleaning and Closure Procedures*
- American Petroleum Institute:

- Recommended Practice 1604, *Removal and Disposal of Used Underground Petroleum Storage Tanks*
- Recommended Practice 1631, *Interior Lining of Underground Storage Tanks*
- Publication 2015, *Cleaning Petroleum Storage Tanks*

A3.11. Confined Space Entry:

- National Institute for Occupational Safety and Health: *Criteria for a Recommended Standard, Working in Confined Space*
- AFOOSH Standard 127-5, *Confined Spaces*