

FUEL STORAGE TANKS AT FAA FACILITIES: Order 1050.15A

EXECUTIVE SUMMARY

The Federal Aviation Administration (FAA) has over 4,000 fuel storage tanks (FST) in its inventory. Most of these FST's are underground storage tanks (UST) that contain fuel for emergency backup generators providing secondary power to air navigational facilities, critical to the safe movement of air traffic in the National Airspace System (NAS).

The U.S. Environmental Protection Agency (EPA) reports that 50 percent of the U.S. population uses groundwater as a source of drinking water. EPA studies indicate that 25 percent of all UST's may be leaking hazardous contaminants into the Nation's soil and groundwater sources and many more UST's will be leaking in the future. If a tank system is past its prime (over 10 years old for bare steel tanks with no corrosion protection), the potential for leaking increases dramatically. Cleanup costs alone for soil and groundwater contamination evolving from leaking UST's can escalate to and exceed \$100,000 per site. In addition, fines and civil penalties associated with these tanks can reach as much as \$25,000 for each day of noncompliance.

The majority of FAA FST's are underground storage tanks which are regulated by the EPA's Underground Storage Tank regulation, 40 CFR Part 280. In accordance with the EPA regulation, all UST's that do not provide for corrosion protection (i.e., single-walled bare steel tanks) must be removed, replaced with a tank meeting the new standards, or retrofitted with corrosion protection by December 1998. As existing single-walled UST's are removed, FAA has been replacing them with double-walled corrosion protected UST's and aboveground storage tanks (AST) where practicable. Unlike UST's, there is no one comprehensive Federal AST regulation; however, these tanks are primarily governed under the EPA Oil Pollution Prevention regulation, 40 CFR Part 112, commonly known as the Spill Prevention Control and Countermeasures (SPCC) regulation.

Order 1050.15A establishes updated policy and procedures needed to comply with constantly changing UST and AST regulations, to minimize risks to human health and the environment, and to minimize potential FAA liability. This order primarily:

- establishes policy, procedures, guidelines, responsibilities, budgeting, reporting, and recordkeeping requirements pertaining to existing and new UST's and AST's;
- establishes requirements for maintaining an official FST data base;
- provides decisionmaking guidelines for replacing existing UST's;
- provides minimum technical requirements for existing and new UST's;
- establishes leak detection requirements for non-EPA deferred UST's and leak detection recommendations for EPA-deferred UST's;
- provides guidelines and requirements for UST closure, removal, and disposal;
- delineates spill prevention and cleanup response measures; and
- provides minimum technical requirements for regulated AST's.

FOREWORD

This order establishes agency policy, procedures, responsibilities, and implementation guidelines for compliance with regulations pertaining to underground storage tanks (UST) of the Federal Aviation Administration as required by the Resource Conservation and Recovery Act of 1976 (52 U.S.C. §6901 et seq.), as amended by the Hazardous and Solid Waste Amendments of 1984 (Public Law 98-616) and other acts, and as implemented by the U.S. Environmental Protection Agency's "Underground Storage Tanks; Technical Requirements and State Program Approval; Final Rules regulation, 40 CFR Parts 280 and 281." Although no one comprehensive Federal regulation on aboveground storage tanks (AST) existed prior to publication of this order, AST's are affected by various regulations such as the Oil Pollution Prevention regulation codified at 40 CFR Part 112. This order also addresses FAA policy on AST's until a single comprehensive regulation is promulgated.

The Congress of the United States has declared it to be the national policy of the United States that, wherever feasible, the generation of hazardous waste is to be reduced or eliminated as expeditiously as possible. Waste that is nevertheless generated should be treated, stored, or disposed of so as to minimize the present and future threat to human health and the environment.

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CHAPTER 1. GENERAL REQUIREMENTS

1. PURPOSE. This order establishes Federal Aviation Administration (FAA) policies, procedures, responsibilities, and implementation guidelines for new and existing underground storage tanks (UST) containing any substance defined in section 101(14) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980 (except for those listed as hazardous wastes under subtitle C of RCRA) and refined and waste petroleum and byproducts as regulated by "The Resource Conservation and Recovery Act (RCRA)" of 1976 (52 U.S.C. §6901 et seq.), as amended by "The Hazardous and Solid Waste Amendments of 1984" (Public Law 98-616) and other acts and as implemented by the "Underground Storage Tanks; Technical Requirements and State Program Approval; Final Rules regulation, 40 CFR Parts 280 and 281." This order also establishes FAA policies, procedures, responsibilities, and implementation guidelines for aboveground storage tanks (AST).
2. DISTRIBUTION. This order is distributed to the director level in Washington, to the division level within Airway Facilities Service, Offices of Airport Safety and Standards, Airport Planning and Programming, Civil Aviation Security Operations, Civil Aviation Security Policy and Planning, Environment and Energy, Aviation Medicine, and Financial Services, and to the division level in the regions with a branch level distribution in the Airway Facilities and Logistics Divisions; to the division level at the Aeronautical Center with a branch level distribution in the Office of Facility Management and the FAA Logistics Center; to the division level in the Aviation System Standards Office; to the division level at the Technical Center; and a limited distribution to all Airway Facility Sector Field Offices and Field Maintenance Parties.
3. CANCELLATION. Order 1050.15, Underground Storage Tanks at FAA Facilities, dated August 17, 1987, is canceled.
4. EXPLANATION OF CHANGES. This revision:
 - a. Updates FAA policy to reflect the requirements of the EPA Underground Storage Tank regulation which was effective December 22, 1988. This order also establishes FAA policy regarding regulated AST's.
 - b. Updates leak detection monitoring on new UST's. Numerous false alarms have been attributed to vapor sensors installed on new UST's, and unless required by state or local regulations, hydrocarbon vapor sensors are no longer required as part of leak detection monitoring on new UST's.
 - c. Updates FAA UST tightness testing policy, which is no longer required twice yearly. Specifies EPA requirements with respect to tightness testing. Special recommendations are included for emergency generator UST systems which are deferred from EPA release detection requirements.

d. Clarifies leak detection monitoring requirements for UST's, existing and new, to determine month-to-month integrity of the tank system. Special recommendations are included for emergency generator UST systems which are deferred from EPA release detection requirements.

e. Specifies required construction methods of new UST's to be of fiberglass reinforced plastic (FRP) or steel clad with fiberglass to provide for sufficient corrosion protection. New UST's may also be constructed of double-walled steel incorporating the Steel Tank Institute's STI-P3 cathodic protection, provided approval has been granted by the ANS FST Program Manager.

f. Specifies requirements of new UST and AST leak detection systems to require automatic tank gauging, piping line leak detection, the capability of tightness testing, and remote maintenance monitoring. These tanks also require spill and overflow prevention equipment, spill containment kits, or a spill containment structure.

g. Clarifies measures of regulated AST's requiring site specific Spill Prevention Control and Countermeasures (SPCC) and/or Facility Response plans in accordance with the Oil Pollution Prevention regulation, 40 CFR Part 112.

h. Clarifies EPA exemptions from Federal UST regulations. The EPA has exempted heating oil tanks from the Federal UST regulation. In the event that applicable state and local regulations are broader in scope or are more stringent and do not exempt heating oil tanks, the FAA will comply with the applicable state and local regulations.

i. Specifies recordkeeping requirements to be maintained at the facility or sector level, including release detection performance, implementing agency correspondence, testing and sampling, cathodic protection, and in-place tank closure records.

j. Specifies minimum requirements, other pertinent information, and the document location regarding EPA requirements for UST's; EPA regional and state contacts; a notification form for UST's; a sample UST installation worksheet; a sample SPCC plan; AST state contacts; and additional information and/or references located in the appendices.

5. BACKGROUND.

a. To protect the Nation's drinking water supply, reduce quantities of potentially hazardous waste generated, and mitigate other risks associated with leaking UST's, the Congress of the United States added a Subtitle I to the Solid Waste Disposal Act in its Hazardous and Solid Waste Amendments of 1984 (HSWA).

b. HSWA governs the use of UST's by setting specific requirements. This includes, but is not limited to, requirements for:

(1) Maintaining a leak detection system, an inventory control system together with tank testing, or a comparable system or method designed to identify releases in a manner consistent with the protection of human health and the environment.

(2) Maintaining records of any monitoring or leak detection system, including an inventory control system, tank testing, or comparable system.

(3) Reporting releases and corrective action taken in response to a release from a UST.

(4) Removing tanks to prevent future releases of regulated substances into the environment.

c. Section 9003 of RCRA required EPA to promulgate regulations applicable to all owners and operators of UST systems as necessary to protect human health and the environment. On September 23, 1988, EPA issued the final rule "Underground Storage Tanks; Technical Requirements and State Program Approval; Final Rules regulation, 40 CFR Parts 280 and 281." The final EPA rulemaking was effective December 22, 1988.

6. DEFINITIONS.

a. "Abandoned tank" means a UST, regardless of age, which has been out of service longer than 12 months and does not meet the temporary tank closure requirements and is not intended to be returned to service or is unfit for use.

b. "Ancillary equipment" means 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 regulated FST's.

c. "Cathodic protection" means a technique to prevent corrosion of a metal surface by making that surface the cathode of an electrochemical cell. For example, a tank system cathodically protected through the application of galvanic anodes or impressed current.

d. "Center" means the Aeronautical or Technical Center.

e. "Double-walled tank" means a container with two complete shells which provide both primary and secondary containment. The outer shell shall provide structural support and shall be constructed primarily of non-earthen materials including, but not limited to, steel and Fiberglass Reinforced Plastic (FRP).

f. "EPA" means Environmental Protection Agency.

g. "Existing UST's" means any UST system used to contain an accumulation of regulated substances for which installation commenced on or before December 22, 1988. Installation is considered to have commenced if: (1) The owner/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; and if (2) (a) either a continuous onsite physical construction or installation program has begun; or (b) the owner/operator has entered into 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.

h. "Free product" refers to a regulated substance that is present as a nonaqueous phase liquid (e.g., liquid not dissolved in water).

i. "Fuel storage tank" (FST) encompasses all regulated underground and aboveground storage tanks, including state-regulated heating oil tanks.

j. "Groundwater" means the water beneath the surface of the ground, consisting largely of surface or atmospheric water that has seeped down, and subsurface water which may migrate into a well, spring, or body of surface water.

k. "Implementing agency" means EPA, or in the case of a state with a program approved under section 9004 of RCRA (or pursuant to a memorandum of agreement with EPA), the designated state or local agency responsible for carrying out an approved UST program.

l. "New UST's" means any UST system that will be used to contain an accumulation of regulated substances for which installation commenced after December 22, 1988.

m. "Oil or petroleum liquid" or "product" means oil of any kind or in any form including, but not limited to, petroleum, fuel oil, sludge, oil refuse, and oil mixed with wastes other than dredged soil.

n. "Operator" means any person in control of, or having the responsibility for, the daily operation of the UST system.

o. "RCRA" means Resource Conservation and Recovery Act.

p. "Regulated substance" means any hazardous substance defined in section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), to include petroleum, including crude oil, or any fraction thereof that is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute). 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 through 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.

q. "Reportable release" means any unauthorized release which triggers a reporting obligation under Federal, state, or local law (see Chapter 7, Spill Prevention, Release Response, and Cleanup).

r. "UL listed" means included in a current list or report of approved equipment, materials, or methods published by Underwriters Laboratories, Incorporated.

s. "Unauthorized release" means any spilling, leaking, emitting, discharging, escaping, leaching, or disposing from a UST into groundwater, surface water, surface soils, or subsurface soils.

t. "Underground storage tank" (UST) means any one or combination of tanks, including connecting underground pipes, used for storage of regulated substance (e.g., petroleum fuel products and waste oil) the volume of which is 10 percent or more beneath the surface of the ground. EPA excludes the following tanks from the UST regulation: tanks used for heating purposes, septic tanks, surface impoundments, and storm water or waste water collection systems (state regulations may mandate some or all of the tanks excluded by the EPA).

u. "Upgrade" means the addition or retrofit of some systems such as cathodic protection, lining, or spill and overflow controls to improve the ability of a UST system to prevent the release of a product.

v. "Vadose zone" is a geological term meaning the soil found or located beneath the soil surface and above the water table. This is also known as the unsaturated zone.

7. POLICY.

a. Underground Storage Tanks (UST). FAA shall comply with this order and the UST requirements of HSWA Section 9004 as codified in 40 CFR Part 280. However, more stringent state and local regulations pertaining to UST's shall take precedence, except civil penalties imposed by state or local agencies with UST programs not approved by EPA. The applicability of such penalties to FAA facilities must be determined in consultation with the Office of the Chief Counsel or appropriate regional or center counsel.

b. Aboveground Storage Tanks (AST). FAA shall comply with this order and the Oil Pollution Prevention requirements of the Clean Water Act, also referred to as the Spill Prevention Control and Countermeasures (SPCC) regulations as codified by 40 CFR Part 112. However, more stringent state and local regulations pertaining to AST's shall take precedence, except civil penalties imposed by state or local agencies with AST programs not approved by EPA. The applicability of such penalties to FAA facilities must be determined in consultation with the Office of the Chief Counsel or appropriate regional or center counsel.

c. Heating Oil Tanks. EPA has exempted heating oil tanks from Federal UST regulation; however, some states have included these tanks within their UST regulations. FAA honors the exemption for heating oil tanks. The FAA storage tank program shall provide funds for upgrading or replacement of these tanks to comply with state and local requirements.

d. EPA Exemptions. The following is a comprehensive list of exemptions for EPA's UST regulation:

(1) Farm or residential tank of 1,100 gallons or less capacity used for storing motor fuel for noncommercial purposes.

(2) Tanks used for storing heating oil for consumptive use on the premises where stored.

(3) Pipeline facility (including gathering lines) regulated under:

(a) The Natural Gas Pipeline Safety Act of 1968 (49 U.S.C. App. 1671, et seq.) or

(b) The Hazardous Liquid Pipeline Safety Act of 1979 (49 U.S.C. App. 2001, et seq.) or

(c) Which is an intrastate pipeline facility regulated under state laws, comparable to the provisions of the law referred to in (a) or (b) above.

(4) Surface impoundment, pit, pond, or lagoon.

(5) Storm water or waste water collection system.

(6) Flow-through process tank.

(7) Liquid trap or associated gathering lines directly related to oil or gas.

(8) Storage tank situated in an underground area (i.e., basement, cellar, mineworking, drift, shaft, or tunnel) if the storage tank is situated upon or above the surface of the floor.

8. **RESPONSIBILITIES.** Compliance with the policies and procedures of this order is the responsibility of the regions, centers, services, and offices with jurisdiction over FST's. This order shall in no way relieve any FAA facility of Federal, state, or local compliance requirements.

a. Airway Facilities Service shall:

(1) Establish an organizational structure and procedures to ensure that the FST program is implemented within Airway Facilities divisions in the regions. This structure shall include designation of specific individuals responsible for reports and notifications and ensure that these individuals are aware of their responsibilities.

(2) Develop implementation procedures to ensure that FST's used in NAS facilities conform to policies incorporated herein.

(3) Ensure that adequate personnel resources are available for implementing the FST program.

(4) Ensure that the estimates of funding necessary to comply with this order are included in the annual budget submissions, including but not limited to, considerations of the following: tank removal, upgrades, tank replacements, leak detection monitoring, contaminated soil and groundwater cleanups, soil/groundwater testing, permits, registrations, and inspection costs, and ensure that these actions are executed.

(5) Work with contracts and procurement personnel to ensure that support services are provided for soliciting, selecting, negotiating, and administering contracts for services required to implement the FST program in Airway Facilities divisions.

(6) Ensure that all FST operations for which Airway Facilities is responsible comply with Federal, state, and local requirements, both substantive and procedural, that are applicable to those operations, including payment of reasonable service charges. Ensure that copies of environmental notices of violations, notices of noncompliance, and other similar notices are submitted to regional counsel.

(7) Collect and provide appropriate FST documentation and budget information to the Office of Environment and Energy (AEE) for completion of various reports. Document and notify AEE of FST cleanups, estimated costs, and extent of contamination.

(8) Ensure that FST program requirements are considered as soon as practicable in all construction, operation, and other projects and programs administered directly by Airway Facilities, including decommissioning projects.

(9) Ensure that all UST's and AST's are properly registered, permitted, and certified for correct installation of new FST's. Ensure that they are properly disposed, and that they maintain the required inventories, records, and reports.

(10) Maintain an official data base inventory of regulated FAA FST's.

(11) Ensure site-specific training is carried out in accordance with site-specific SPCC or Facility Response plans, if required, for regulated AST's.

(12) Engage in the development, negotiation, and implementation of compliance orders, consent decrees, and interagency agreements, as necessary, after consultation with the FAA Chief Counsel and/or regional counsel.

b. Facility Engineering and Operations Branch Manager (Technical Center), and Center Facility Planning and Support Division Manager (Aeronautical Center) are responsible for developing implementation procedures not otherwise detailed in this order (to comply with state and local regulations); providing for assignment of an FST coordinator, other key personnel, and resources necessary to carry out the required inventories, inspections, leak detection monitoring, registration, tank removal, environmental cleanup measures, permits, and annual updating of an FST inventory data base. Specifically, these center managers shall:

(1) Establish an organizational structure and procedures to ensure that the FST program is implemented within the center's jurisdiction.

(2) Collect and provide appropriate FST documentation and budget information to the Office of Environment and Energy (AEE) for completion of various reports.

(3) Engage in the development, negotiation, and implementation of compliance orders, consent decrees, and interagency agreements, as necessary, after consultation with the FAA Chief Counsel and/or regional counsel.

(4) Ensure that all operations comply with applicable Federal, state, and local environmental laws, rules, and regulations including, but not limited to, conducting all sampling and monitoring and providing all reports required by regulatory bodies.

(5) Ensure that all UST's and AST's are properly registered, obtain permits and certification of correct installation for new UST's, ensure proper disposal, and maintain the required inventories, records, and reports.

(6) Ensure site-specific training is carried out in accordance with site-specific SPCC or Facility Response plans, if required, for regulated AST's.

c. Office of Environment and Energy is responsible for the overall FAA environmental policy on FST's and coordination of that policy with the regional, center, and service directors. It is responsible for the development of policies pursuant to EPA requirements, provision of advice and assistance to offices, services, regions, and centers in development of guidelines and procedures for their program areas, interpretation of the policies established in this order in consultation with the responsible officials in the EPA, and provision of assistance to responsible officials in the FAA concerning changes in EPA policies relative to FST's. AEE also reviews implementing instructions developed by FAA field units for consistency with agency policy.

d. Aviation System Standards (AVN) shall be responsible for development of procedures, implementation, and compliance with EPA, state, and local requirements at aircraft maintenance bases that manage FST's. AVN also shall provide for assignment of key personnel and resources necessary to carry out the initial inventories, inspections, leak detection monitoring, tank removal, environmental cleanup, registration, and annual updating of an FST inventory data base.

e. Regional Logistics Divisions shall be responsible for providing logistic support to ANS, centers, other regional divisions, the FAA Logistics Center, and AVN in the development of criteria for the transportation and disposal of FST's, piping, and all surplus equipment resulting from an FST replacement or FST removal. Disposal shall be in accordance with EPA or in a state-approved manner.

f. The Office of Financial Services (ABA) shall use this order as the basis for developing the annual call for estimates related to costs of compliance with regulations initiated by Federal, state, and local authorities.

g. The Facility Engineering Service (AFE) shall assist in the development of standards and evaluation of FST alternatives to provide the most efficient and ecologically sound facilities.

h. The Office of the Chief Counsel (AGC) and the regional and center counsels are responsible for consulting and review relating to compliance orders, consent decrees, legal interpretation of Federal, state, and local requirements, and payment of fees.

9. BUDGET REQUEST PROCEDURES. Normal Operations and Facilities and Equipment budget procedures for current and future budget needs shall be followed. It is the responsibility of the Regional Program Manager for Environment and Safety (RPMES), or equivalent coordinator, to submit a yearly budget to the Airway Facilities Division, Program and Planning Branch, on the costs of the FST program. This is required in the Annual Call for Estimates portion of Order 2500.55 of the current year. Budget request procedures will follow the guidelines established by the National FST program office.

10. RECORDKEEPING. All records shall be maintained and made available within a reasonable time for inspection by the implementing agency after proper notice.

a. UST Registration. EPA, as mandated in the Hazardous and Solid Waste Amendments of 1984, requires that all UST's which are not excluded be registered with the proper state and local authorities. When installing a UST, a state notification form shall be properly completed, including a certification of correct installation. The RPMES or equivalent coordinator shall also ensure that all existing UST's are registered. All in-service, temporarily out-of-service, and permanently out-of-service tanks shall meet this registration requirement. Registration of new UST's or a change in status of existing tanks shall be processed within 30 days of the date of action. Many states also require an annual tank registration. All registration records shall be maintained for the life of the UST system at the nearest Airway Facility Sector Field Office or facility managing FST's.

b. FST Data Base. Current inventories of all in-service, out-of-service, and abandoned (decommissioned/out-of-service longer than 12 months) FST's shall be maintained using the official FST data base approved by the NAS Transition and Implementation Service (ANS) FST program manager. The FST data base shall be updated, and data shall be submitted to the ANS FST program manager on a quarterly basis starting from October 1 of the fiscal year. All replacement, upgrade, and removal activity shall require an amendment of the FST data base and original registration records.

c. Repair Records. Records of each repair shall be maintained at the facility or the nearest Airway Facility Sector Field Office for the remaining life of the FST system. All repairs shall be conducted in accordance with a code of practice developed by a nationally recognized association or an independent testing laboratory.

d. Release Detection Performance Records. All release/leak detection monitoring results shall be maintained monthly at the facility and made readily available to EPA, state, and local (implementing agencies) environmental inspectors. Copies of these records shall be maintained at the facility or forwarded to the nearest Airway Facility Sector Field Office on a quarterly basis. The most recent tank and piping tightness test and other leak detection results shall be maintained a minimum of 1 year, or other

reasonable time period as determined by the implementing agency. All records pertaining to release detection performance claims or testing shall be maintained at the facility or the nearest Airway Facility Sector Field Office for at least 5 years (from the date of installation) or other reasonable time period as determined by the implementing agency.

e. Closure/Disposal Records. Records of closure, removal, and disposal activity shall be maintained at the nearest Airway Facility Sector Field Office. These records shall be maintained for at least 10 years for documentation in the event of a property transfer. The following information shall be required at a minimum:

- (1) Date when UST's removed from service.
- (2) Date and disposal/recycling location of any surplus tank.
- (3) Soil or groundwater sampling, testing and analysis.
- (4) Disposition of contaminated soil.
- (5) Remedial action taken for cleanup of a contaminated site.

f. Cathodic Protection Records. Records of the last three inspections shall be maintained at the facility or nearest Airway Facility Sector Field Office.

g. Closure in Place Tank Records. All records pertaining to permanent closure in place UST's shall be maintained permanently at the UST site, nearest Airway Facility Sector Field Office, and regional office.

h. Implementing Agency Correspondence Records. State and local implementing agencies shall be consulted regarding use of approved UST installers/removers, hazardous waste transporters, incineration plants, and recycling and disposal companies (e.g., obtain state/local approved lists). These and all other correspondence documents shall be maintained at the nearest Airway Facility Sector Field Office for at least 10 years.

11. REPORTING.

a. Implementing Agency Report. All regions, centers, and facilities shall cooperate fully with inspections, monitoring, and testing conducted by the implementing agency. Reports submitted to the implementing agency shall be maintained at the nearest Airway Facility Sector Field Office for at least 10 years and shall include, but not be limited to, the following:

- (1) Notification of installation for all UST systems.
- (2) Reports of all releases in excess of reportable quantities (in the case of a fuel spill or overfill, only those in excess of 25 gallons and those that cannot be remediated within 24 hours), suspected releases, spills and overfills, and confirmed releases.
- (3) Soil or groundwater sampling, testing, and analysis.

- (4) Corrective actions planned or taken.
- (5) Notification of permanent closure or change in service.

b. It is strongly recommended that FAA personnel accompany any Federal, state, or local inspector throughout every site visit, obtain duplicate samples if taken by the inspector, and maintain copies and a list of any documents furnished by and to the inspector. It is also recommended that FAA personnel request an out-briefing from the implementing agency personnel or inspector.

12. PERMITS/FEES. Where applicable, all regions, centers, and aircraft maintenance bases shall meet the annual/recurring registration and permit requirements, including payment of reasonable service charges or fees. Any legal issues concerning fees should be coordinated with the Office of the Chief Counsel or appropriate regional or center counsel prior to payment. In most jurisdictions, permits will be required for installations of new UST's, AST's, and closure of existing tanks.

13. FEDERAL FACILITIES. Section 9007 of RCRA requires each department, agency, and instrumentality of the executive, legislative, and judicial branches of the Federal Government having jurisdiction over any UST to comply with all Federal, state, interstate, and local requirements.

14. STATE AUTHORITY. Section 9008 of RCRA allows any state or political subdivision to adopt or enforce any regulation, requirement, or standard of performance respective to UST's that is more stringent than a regulation, requirement, or standard of performance in effect as a result of the 1984 amendments. It shall be the responsibility of every regional and center director to ensure compliance with local and state regulations regarding UST's as well as AST's.

15. REGULATORY REVIEW.

a. State and local regulations. The RPMES or equivalent coordinator shall provide regulatory assistance and disseminate guidance to implementing field personnel regarding state and local FST requirements applicable to their region, center, and aircraft maintenance base. The Office of the Chief Counsel or appropriate regional or center counsel shall be consulted regarding any legal interpretive issues.

b. Variances. State and local jurisdictions may allow variances to existing UST regulations. Circumstances may justify exemptions from overly restrictive requirements. If a variance is granted which conflicts with this order, the variance will supersede the order if the agreement is otherwise consistent with Federal law.

c. Compliance Agreements. After coordination with regional and center counsel, regions or centers may negotiate and engage in compliance agreements (i.e., cleanups, replacement timetables, leak detection requirements, etc.) with the implementing state agency. In this case, the terms and conditions of the state-approved compliance agreement will override FAA orders.

16. SECURITY AND RISK MANAGEMENT FACTORS. Fuel storage tanks are important to the continued operation of FAA facilities and should therefore be listed in security risk and vulnerability analyses as assets. Because of the potential hazards to personnel and real estate that can result from negligence or damage to such storage locations, the responsible manager shall incorporate appropriate security provisions and safeguards in the Facility Security Management Plan required by Order 1600.6C, Physical Security Management Program. Security provisions shall include the requirement for fuel storage tanks to be included in inspections and surveys provided by the Servicing Security Element (SSE).

17. AUTHORITY TO CHANGE THIS ORDER.

a. The Administrator reserves the authority to approve changes which establish policy, delegate authority, or assign responsibility.

b. The Director of Environment and Energy may issue changes to this order for compliance with the latest EPA policy regarding UST's and AST's. Federal, state, and local regulatory changes in UST and AST regulations that take effect after issuance of this order shall take precedence over any part of this order with which it conflicts.

c. Changes to this order proposed by an organizational element within FAA must be submitted to AEE. AEE will oversee the coordination of the change with the appropriate approval authority and ensure final processing.

18.-19. RESERVED.

CHAPTER 2. UST REPLACEMENT DECISIONMAKING GUIDELINES

20. FACILITY ASSESSMENT. Managers who have responsibility for managing UST's shall investigate alternative options to determine the best course of action to provide fuel for secondary power, or other underground storage needs at a facility, or eliminate the need for fuel storage entirely. These actions will help to minimize the potential for exposure to future environmental contamination.

21. REPLACEMENT PRIORITIZATION GUIDELINES. Recognizing that removal and replacement decisions are highly dependent upon regional and site-specific situations, this section provides guidance for setting priorities.

a. When systematic removal and replacement of tanks is performed, the following removal/replacement considerations should remain a high priority:

- (1) Known and suspected leakers (i.e., test results indicating a leak).
- (2) Age (i.e., single-walled, cathodically unprotected, bare steel UST's greater than 15 years).
- (3) Proximity to sensitive environments and high groundwater tables.

b. Although there are some inherent risks associated with implementing removal/replacement schedules without the benefits associated with tank testing and the knowledge of early leak detection, risks can be greatly reduced by developing removal/replacement prioritization schedules that are based primarily on these considerations.

c. If implementation schedules are not based primarily on these considerations, risks to the agency, human health, and the environment are greatly increased. Contingent environmental liabilities and overall program costs will increase symmetrically. In addition, regions and other field entities shall submit an exemption document indicating the rationale for not following prioritization guidelines. Therefore, regions and other field entities that do not base removal/replacement implementation schedules primarily on these high priority considerations are subject to greater risks and are strongly urged to institute phased annual tightness testing and periodic monitoring.

d. In general, whenever systematic removal or replacement of tanks is required, the following criteria, which includes high priority considerations, should be considered in determining priorities:

(1) Known and Suspected Leakers. This is a high priority consideration. When inventory losses and/or tank tightness testing indicate and reasonably confirm that a tank is leaking, the tank contents shall be removed immediately and the tank and/or associated piping shall be repaired or replaced. Soil and groundwater testing and any required cleanup measures shall commence in conjunction with the repair or replacement (see chapter 7).

(2) Stringent Regulations. The Federal EPA has deferred requiring release detection for existing tanks (installed prior to December 22, 1988) that store fuel solely for use by emergency power generators; however, states and localities may enact requirements that are more stringent than the Federal UST requirements, including requiring release detection for EPA-deferred tank systems. If the state and local implementing agencies require more stringent leak detection requirements than the Federal EPA, and no provisions for variances are granted by the implementing agency, these emergency power generator UST's shall have high replacement priority.

(3) Nonemergency Power Generator UST's. Existing UST's that are not used for emergency power generators and do not meet new UST system requirements have high replacement priority.

(4) High groundwater locations and sensitive ecosystems. Tanks located in high groundwater areas among major populations or environmentally sensitive areas, which are of simple single-wall construction without cathodic protection, are prime candidates for replacement. This is a high priority consideration.

(5) Composition and cathodic protection of tank. UST material and composition shall be considered (i.e., metal or fiberglass, and single- or double-walled) and whether the tank is cathodically protected or unprotected. Cathodically unprotected steel tanks (susceptible to corrosion) should generally have high replacement priority when the UST is greater than 15 years old.

(6) Age of existing tank. Single-walled steel tank and piping over 15 years old are prime candidates for replacement. This is a high priority consideration.

(7) Future plans for the site. UST systems should not be replaced with a new UST system without considering the future plans for the site (e.g., property transfer may develop 5 years after the new UST system is installed).

(8) Out-of-service and abandoned tanks. Surveys shall be conducted to locate all out-of-service and abandoned tanks. Suggested methods for identifying abandoned tanks include facility personnel interviews, property records, engine generator records, fire department records, and geophysical sensing devices, such as terrain conductivity meters and ground-penetrating radar. Abandoned tanks shall be removed where feasible; however, closure procedures shall be followed (see chapter 6).

(9) Facility conversion. Facilities that are scheduled for conversion to battery-standby power, and are not leaking, shall not be removed until conversion is complete and fully operational. Those systems found to be leaking shall implement cleanup response procedures immediately.

(10) Site Investigations. Site locations that are currently undergoing UST site investigations or may be required to perform site investigations and subsequent cleanup may have limited alternative UST replacement options.

(11) Mobilization. Site locations and facilities that manage multiple tanks or sites located within extreme distances or inclement weather conditions shall be considered in the replacement prioritization scheme.

22.-29. RESERVED.

CHAPTER 3. UST's INSTALLED BEFORE DECEMBER 22, 1988 (EXISTING UST's)

30. DEFINITION. An existing UST is defined as any tank system used to contain an accumulation of regulated substances for which installation has commenced on or before December 22, 1988.

31. GENERAL REQUIREMENTS. Not later than December 22, 1998, all UST systems shall either be replaced to meet new tank requirements (see Chapter 4, UST's Installed After December 22, 1988), removed, or upgraded with cathodic protection, and all UST's shall have spill/overflow devices. In an effort to minimize upgrading complications associated with installing and maintaining cathodic protection systems, all tanks shall meet new system requirements of this order by December 22, 1998, or close permanently. However, in some instances an assessment may be needed to determine the most practicable and cost-effective alternative. If it has been determined that upgrading with cathodic protection is the most practicable and cost-effective alternative, then all upgrading requirements shall be met prior to December 22, 1998. Upgrading plans and decisions shall be coordinated through the ANS FST Program Manager. Upgrading decisions should consider factors such as continuous maintenance of the upgrade, availability of maintenance resources, the composition and condition of the tank and piping, age of the UST, groundwater location, environmental sensitivity, future plans for the site, and state and local requirements.

32. UPGRADING EXISTING TANK SYSTEMS. If approved by the ANS FST Program Manager, upgrading existing bare steel tanks with cathodic protection (refer to API Bulletin 1632, Cathodic Protection of Underground Petroleum Storage Tanks and Piping Systems, or interior lining (refer to API Bulletin 1631, Recommended Practice for the Interior Lining of Existing Steel Underground Storage Tanks), shall be installed no later than December 22, 1998. Assessment of the tank system (by inspection or testing) shall be conducted to ensure that the system is structurally sound and free of corrosion holes prior to installing the cathodic protection system. Cathodic protection systems using impressed current shall be inspected every 60 days to ensure proper operation. Other cathodic protection systems shall be inspected as recommended by the manufacturer. A qualified cathodic protection tester shall test the cathodic protection system within 6 months of installation and at least every 3 years thereafter. Records of at least the last three inspections shall be maintained at the facility or nearest Airway Facility Sector Field Office. In addition to adding cathodic protection, spill and over-fill prevention equipment shall be installed no later than December 22, 1998 (see paragraph 70).

33. EPA DEFERRAL AND LEAK DETECTION DEADLINES. The EPA has deferred requiring release detection for existing tanks (installed prior to December 22, 1988) that store fuel solely for use by emergency power generators; however, state and local agency regulations take precedence over EPA regulations and may require more stringent release detection requirements on all tanks, including EPA deferred tank systems.

34. TANK TIGHTNESS TESTING AND LEAK DETECTION. Inventory control, manual tank gauging, tightness testing, or other leak detection methods shall be performed in accordance with Chapter 5, Leak Detection Methodology. State and local tightness testing and leak detection requirements that are more stringent shall supersede Federal requirements. Tanks that indicate leakage shall be immediately emptied and then repaired or removed.

35. LEAKING TANKS AND RELEASES. The implementing agency shall be notified within 24 hours of a suspected (e.g., sudden loss of product or unexplained presence of water in the tank) or confirmed release (e.g., tank tightness test failure). All spills and overfills shall be contained and immediately cleaned up. In addition, any spills or overfills of petroleum shall be reported to the implementing agency immediately, but no later than within 24 hours unless the spill or overfill is less than or equal to 25 gallons, and is remediated within 24 hours. If this cleanup cannot be accomplished within 24 hours, the implementing agency shall be notified immediately. Spills of petroleum of any amount which reach navigable waters and cause a sheen on the surface must be reported to the National Response Center (1-800-424-8802) immediately. Spills and overfills of hazardous substances exceeding the reportable quantity in a 24-hour period must also be reported to the National Response Center immediately. Tank and piping tightness testing shall be performed on tanks suspected of leaks. All leaking UST's shall have their contents immediately removed, and the tank shall either be repaired (e.g., tighten loose pipe fittings) prior to re-commissioning or removed. Environmental cleanup response measures shall be performed as discussed in paragraph 72.

36.-39. RESERVED.

CHAPTER 4. UST's INSTALLED AFTER DECEMBER 22, 1988 (New UST's)

40. DEFINITION. A new UST installation is defined as any tank system that will be used to contain an accumulation of regulated substances and for which installation has commenced after December 22, 1988.

41. MINIMUM TANK INSTALLATION REQUIREMENTS. The installation and policy requirements are as follows:

a. All new installations shall consist of a 30-year warranted (warranted against internal and external corrosion and structural failure), U.L.-approved double-walled fiberglass reinforced plastic (FRP) tank or double-walled steel tank clad with fiberglass (both shall provide for interstitial monitoring), secondary containment of all primary piping, which shall consist of nonferrous piping (to eliminate the need for cathodic protection maintenance requirements), spill and overflow protection devices, and a leak detection system that meets the minimum leak detection system requirements in paragraph 45. All new UST installations shall comply with Federal, state, and local regulations. The prevailing implementing agency shall be notified and consulted prior to tank installation.

b. It shall be an FAA policy to install double-walled FRP or double-walled steel clad with fiberglass tanks only. However, if these tanks cannot be obtained or installation is not practicable, a double-walled steel tank incorporating the Steel Tank Institute's STI-P3 cathodic protection shall be installed provided that approval has been granted by the ANS FST Program Manager. It should be noted that the 30-year limited warranty for these tanks may not be honored for steel tanks installed in soils with resistivity of less than 2,000 Ohms. A qualified cathodic protection tester shall test the cathodic protection system within 6 months of installation and every 3 years thereafter. In addition, impressed current cathodic protection systems shall be inspected every 60 days to ensure proper operation. Records of at least the last three inspections shall be maintained at the facility or nearest Airway Facility Sector Field Office.

42. MINIMUM TANK INSTALLATION PROCEDURES. EPA has identified poor tank and piping installation as a leading cause of releases. The use of inappropriate backfill materials and improper pipefitting and backfilling practices contribute to most UST system corrosion or structural failures. The requirements are as follows:

a. All state and local requirements shall be met prior to installation. The implementing agency shall be notified within 30 days of installing a new UST system. A site-specific environmental assessment, consistent with the National Environmental Policy Act (NEPA) and meeting the requirements of the most current version of Order 1050.1, Policies and Procedures for Considering Environmental Impacts, is required for the installation of a tank at a new site. For existing tank sites, a site investigation consistent with the RCRA UST regulatory provisions, shall be performed in accordance with implementing agency guidelines prior to replacement of a leaking tank. A complete site investigation may not be required for the routine replacement of a non-leaking tank

provided that leak detection records confirm no release. However, a less extensive investigation, which is contained in paragraph 62a, shall be required and submitted to the implementing agency. All UST's shall be properly registered with the state and installer's certification verified in accordance with the implementing agency requirements.

Section 280.20d of the UST regulation requires that installation be in accordance with a nationally recognized association or independent testing lab. All installations shall be performed in accordance with the manufacturer's instructions and one of the following standards: American Petroleum Institute Publication 1615, Installation of Underground Petroleum Storage Systems; Petroleum Equipment Institute Publication RP100, Recommended Practices for Installation of Underground Liquid Storage Systems; or American National Standards Institute Standard B31.3, Petroleum Refinery Piping; and B31.4, Liquid Petroleum Transportation Piping System. Installers shall understand the protocol of a particular system and be able to explain which they are following. Depending on the prevailing implementing agency requirements, five methods of installation certification are listed as follows:

- (1) The installer has been certified by the tank and piping manufacturer.
 - (2) The installer has been certified or licensed by the state or local implementing agency.
 - (3) The installation has been inspected and certified by a registered professional engineer with education and experience in UST system installation.
 - (4) The installation has been inspected and approved by the implementing agency.
 - (5) All work listed in the manufacturer's installation checklists has been completed.
- b. Excavation of the site shall allow the tank to be level with respect to the finished grade. Nonlevel tank installation, particularly of FRP tanks, may cause tank failure and shall be avoided.
 - c. Appropriate backfill materials as prescribed by the tank manufacturer (e.g., pea gravel, sand, or crushed rock) shall be used and properly compacted without damage to the tank or coating. In general, pea gravel is a self-compactible and more desirable backfill material.
 - d. In areas with peat, garbage, or other inappropriate material around the tank, a filter fabric barrier shall line the excavation area to prevent the backfill from migrating into the surrounding soils, and thus jeopardizing the support for the tank.
 - e. All FST installations (new installation and replacement) and removed FST's shall be reported to the Real Estate & Utilities Branch. FAA Form 4800-1, Report of Excess Property, shall be completed for inclusion into the Real Property Records. This process should be coordinated through the Real Property Manager and Real Property Custodian. Additional guidance on these procedures should be obtained from Order 4660.8, Real Property Management and Disposal.

43. MINIMUM PIPING REQUIREMENTS.

a. All supply and return piping shall be fitted with secondary containment. The interstitial space in the piping shall be monitored for the presence of hydrocarbon liquid with a continuous electronic monitor, unless exempted by paragraph 43e.

b. The secondary containment shall be of non-metallic pipe designed specifically for this use, capable of being sealed airtight at the tank manway opening and at the associated system (e.g., either the entrance to the building or the engine generator).

c. The primary pipe shall be compatible with the type of fuel used. Improper installation of piping materials (e.g., use of galvanized piping without additional corrosion protection) results in piping failures and such practices shall not be employed.

d. An overflow protection device, specifically a spill catchment basin equipped with a weatherproof locking hinge cover, shall be used around the fill pipe. It shall have a minimum capacity of at least 10 gallons.

e. No release detection is required for suction piping that is designed and constructed to meet the following standards:

(1) The below grade piping operates at less than atmospheric pressure.

(2) The below grade piping is sloped so that the contents of the pipe will drain back into the storage tank if the suction is released.

(3) Only one check valve is included in each suction line.

(4) The check valve is located directly below and as close as practical to the suction pump.

(5) A method is provided that allows compliance with standards (2) through (4) above to be readily determined.

f. New fill pipes shall include locking caps consistent with the specifications in Order 1600.6C, Physical Security Management Program.

44. PRESSURE TESTING OF PIPING SYSTEM AND TANK.

a. The primary piping system shall be tested for leaks prior to backfilling. Before pipe testing, both the UST and associated system shall be isolated from the piping. Primary piping shall be capped at both the tank connection and the connection to the associated system to facilitate testing. The primary piping shall be pressure tested in the presence of the resident engineer before secondary containment is installed. Piping and connections shall be tested under 50 pounds air pressure held for one-half hour using a soap solution on all joints. Check for bubbling leaks. Use a pressure gauge marked in 1 pound increments to take readings.

b. The storage tank shall be pressure tested in accordance with the manufacturer's instructions. If the manufacturer's instructions do not include a specific method to check UST system integrity after installation, the tank shall be tested for leaks before backfilling and again prior to placing the tank in service.

CAUTION: DO NOT EXCEED RECOMMENDED PRESSURES AS THIS MAY DAMAGE THE TANK AND/OR CAUSE EXPLOSION. The National Fire Protection Association recommends that all tanks be tested with air pressure prior to installation.

PRESSURE SHALL NOT EXCEED 5 POUNDS PER SQUARE INCH (psi). Do not approach the endcaps or manways while tanks are being tested. Use an air gauge with quarter pound increments to take readings. Tanks shall not be left unattended during testing.

45. MINIMUM LEAK DETECTION SYSTEM REQUIREMENTS.

a. Unless exempt under paragraph 45h, all new double-walled tanks and piping shall utilize continuous monitoring of the interstitial space. The continuous monitoring system shall include hydrocarbon liquid sensors installed to detect leaks from any portion of the inner tank and piping system (i.e., installed at the lowest portion of the interstitial space that routinely contains product). The interstitial monitor should be capable of discriminating between product and water. The leak detection system shall also be capable of tank "tightness" testing (or another test of equivalent performance, i.e., hydrostatic monitoring), automatic tank gauging, and automatic line leak detection on the piping (see Chapter 5, UST Leak Detection Methodology).

b. The alarm output of the monitor shall provide an indication of the presence of hydrocarbon liquid (i.e., leaking fuel) and shall be capable of electronic digital interface. It shall be capable of producing an audible and visual alarm to alert local personnel of releases.

c. The sensors shall be located in a designated accessway. A means for removal and reinstallation of sensors in the interstitial space shall be provided to facilitate periodic testing of the sensors. The accessway shall be lockable and weathertight.

d. The UST system shall be expandable for the purpose of electronic remote maintenance monitoring, and a dedicated 4-inch opening into the tank and standpipe shall be provided for level instrumentation.

e. All continuously operating leak detection systems shall be installed, maintained, and operated in accordance with the manufacturer's specifications.

f. Alarms generated from continuous monitoring of the interstitial spaces that are verified (not false) shall be reported to the RPMES or equivalent coordinator immediately. Any faulty leak detection system, as indicated by a false alarm, shall be repaired immediately.

g. The continuously operating leak detection system shall be monitored to determine if a release has occurred (see chapter 5), and the leak detection system shall be inspected/tested in accordance with the manufacturer's instructions and during scheduled

visits by maintenance technicians to ensure that the system is functioning properly. Records of testing, false alarms, and inspections shall be kept with the facility technical performance record (TPR) Form 6980-5. In addition, these records shall be maintained at the nearest Airway Facility Sector Field Office.

h. Release detection is not required for suction piping where:

- (1) The below-grade piping operates at less than one atmosphere pressure.
- (2) The below-grade piping is sloped backwards.
- (3) There is only one check valve in each suction line.
- (4) The check valve is located directly below and as close as practical to the suction pump.

46. SPILL AND OVERFLOW DEVICES. All UST systems installed shall use spill prevention equipment (e.g., spill catchment basin) that will prevent product release to the environment when the transfer hose is detached from the fill pipe. UST systems shall also use overfill prevention equipment that will either:

- a. Automatically shut off flow when the system is 95 percent full; and/or
- b. alert the operator by restricting the flow or triggering a high-level alarm when the system is 90 percent full.

47. LEAKING TANKS AND RELEASES. The implementing agency shall be notified within 24 hours of a suspected (e.g., sudden loss of product or unexplained presence of water in the tank) or confirmed release (e.g., tank tightness test failure). All spills and overfills shall be contained and immediately cleaned up. Spills and overfills of less than 25 gallons of petroleum which cannot be cleaned up within 24 hours shall be reported immediately to the implementing agency. In addition, any spills or overfills in excess of 25 gallons shall be reported to the implementing agency within 24 hours and shall be immediately contained and cleaned up. Spills of petroleum of any amount which reach navigable waters and cause a sheen on the surface must be reported to the National Response Center (1-800-424-8802) immediately. Spills and overfills of hazardous substances exceeding the reportable quantity in a 24-hour period must also be reported to the National Response Center immediately. Tank and piping tightness testing shall be performed on tanks suspected of leaks. All leaking UST's shall have their contents immediately removed and the tank shall either be repaired (e.g., tighten loose pipe fittings) prior to re-commissioning or removed. Environmental cleanup response measures shall be performed as discussed in paragraph 72 .

48.-49. RESERVED.

CHAPTER 5. UST LEAK DETECTION METHODOLOGY

50. GENERAL RELEASE DETECTION REQUIREMENTS. The EPA has deferred release detection requirements for tanks storing fuel solely for use by emergency power generators; however, state and local agency regulations supersede Federal EPA regulations as well as FAA policy and may require more stringent release detection requirements on all tanks, including EPA deferred tank systems.

a. All regulated FAA UST's shall employ leak detection. Special provisions have been made for EPA deferred tanks and are covered in paragraph 50i . Federal, state, and local implementing agencies shall be consulted prior to using a leak detection method or installing a leak detection system to determine whether the proposed system meets state and local regulatory requirements, such as being placed on an approved list, and to identify any experience with the type of equipment in that type of terrain.

b. Interstitial monitors installed on new tanks shall be installed to detect a leak from any portion of the tank and the piping if required (see paragraph 43) that routinely contains product.

c. Leak detection equipment installed on new UST's shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's instructions.

d. Leak detection equipment installed after December 22, 1990, shall be capable of a probability of detection of 0.95 and a probability of false alarm of 0.05. Any indications or occurrences of a release shall require immediate notification to the implementing agency.

e. Tank and piping "tightness" testing methods shall be capable of detecting a 0.1 gallon per hour leak rate with a probability of detection of 0.95 and a probability of false alarm of 0.05.

f. Automatic tank gauging equipment used as leak detection to test for the loss of product and to conduct inventory control shall be capable of detecting at least a 0.2 gallon per hour leak rate from any portion of the tank that routinely contains product.

g. Automatic line leak detection equipment on piping, if required (see paragraph 43) shall be capable of detecting leaks of 3 gallons per hour at 10 psi line pressure within 1 hour.

h. All records pertaining to release detection performance or testing shall be maintained in accordance with paragraph 10. The results of leak detection monitoring shall be attached to or documented in the technical performance record Form 6980-5.

i. FAA Leak Detection Policy for EPA Deferred UST's: Although FAA policy parallels the Federal EPA leak detection deferral for emergency generator UST's, it is important to note that EPA did not determine that there is any lower level of risk associated with these tanks, merely that they were more difficult to monitor. Based on the

results of a cost-benefit risk analysis developed by AEE, tightness testing and periodic leak monitoring are recommended. These measures are recommended to reap the benefits of early leak detection, assist in developing removal and replacement prioritization schedules, minimize contingent environmental liabilities and risks to the agency, minimize risks to human health and the environment, and conserve overall program costs and future cleanup funds. Annual tightness testing is recommended for existing EPA-deferred tanks that do not meet new tank standards. Periodic leak detection monitoring (for EPA-deferred emergency generator tanks only) is also recommended as follows:

(1) Perform monthly leak detection monitoring at locations manned by appropriate personnel for gauging fuel levels.

(2) For remote sites and sites not manned with appropriate personnel for gauging fuel levels, perform leak detection monitoring in those months when the appropriate personnel or technician(s) visit the site for other maintenance.

(3) EPA-deferred tanks which are required to comply with more stringent state or local release detection shall follow the prevailing requirements; the implementing agency requirements shall supersede this FAA policy.

51. UST's INSTALLED AFTER DECEMBER 22, 1988 (New UST's).

a. All new tank systems (tanks installed after December 22, 1988) shall employ a leak detection system that continuously monitors the interstitial space for releases (see Chapter 4, UST's Installed after December 22, 1988-New UST's). The system shall consist of hydrocarbon liquid sensors installed to detect a leak from any portion of the tank and piping that routinely contains product. In most cases this may involve situating the sensors in the lowest portion of the interstitial space. The leak detection system shall be capable of tank "tightness" testing (or another test of equivalent performance, i.e., hydrostatic monitoring), automatic tank gauging, and automatic line leak detection. All leak detection/release monitoring, inspections, and tests shall be documented. Release detection shall be monitored and recorded monthly. EPA-deferred tanks should be monitored in accordance with paragraph 50i. Some state and local agencies may require additional monitoring such as soil vapor or groundwater monitoring. If required, these monitoring methods shall be conducted in accordance with the implementing agency schedule. All tank tightness testing or release monitoring records shall be maintained in accordance with paragraph 10.

b. Unless deferred from release detection (i.e., an emergency generator UST), any newly installed tank system employing inventory control or manual tank gauging shall conduct tank and piping "tightness" testing at least every 5 years and only until 10 years after installation. After this time, the tank system shall no longer use inventory control or manual tank gauging and shall be equipped with a leak detection system approved by the implementing agency. Release detection shall be monitored and recorded monthly except that EPA deferred tanks should be monitored in accordance with paragraph 50i. All tank tightness testing or release monitoring records shall be maintained in accordance with paragraph 10.

52. UST's INSTALLED BEFORE DECEMBER 22, 1988 (Existing UST's) Unless deferred from release detection (i.e., an emergency generator UST), all existing tank systems (tanks installed prior to December 22, 1988) and tanks that do not meet new tank system requirements (i.e., installed release detection system) shall conduct monthly inventory control or manual tank gauging until December 22, 1998, when the tank shall be removed or upgraded. In addition, each system shall conduct annual tank and piping "tightness" testing until December 22, 1998, when the tank shall be removed or upgraded and equipped with a leak detection system approved by the implementing agency. Existing UST systems employing inventory control or manual tank gauging that have already been upgraded with cathodic protection and spill and overfill prevention equipment (refer to paragraph 32, Upgrading Existing Tank Systems) shall conduct tank and piping tightness testing at least every 5 years until December 22, 1998, or 10 years after upgrading, whichever is later. After this time, the tank system shall no longer use inventory control or manual tank gauging and shall be equipped with a leak detection system approved by the implementing agency. Release detection shall be monitored and recorded monthly except EPA-deferred tanks which should be monitored in accordance with paragraph 50i. All tank tightness testing or release monitoring records shall be maintained in accordance with paragraph 10.

53. MONTHLY INVENTORY CONTROL.

a. UST inventory control volume measurements shall be recorded and reconciled in accordance with paragraph 50i for UST's that are used for backup emergency power generators.

b. UST inventory control volume measurements shall be recorded daily and reconciled on a monthly basis for existing UST's that are not used for backup emergency power generators.

c. Inventory control is similar to balancing a checking account. UST inventory volume measurements (inputs, withdrawals/consumption, and the amount still remaining in the tank) are recorded (usually on a ledger form) using a gauge stick that is capable of measuring the level of product over the full range of the tank's height to the nearest one-eighth of an inch. The level on the gauge stick can be translated to a volume of product in the tank using a calibration chart, which is often furnished by the UST manufacturer. The gauge stick data and the fuel expenditure and delivery data are reconciled and the month's gauge stick data and the fuel expenditure and delivery data

are reconciled and the month's overage or shortage is determined. If the overage or shortage is greater than or equal to 1.0 percent of the tank's flow-through volume plus 130 gallons of product, the UST may be leaking. If an overage or shortage continues to exceed this range for two consecutive months, tank and piping tightness testing shall be conducted immediately to confirm the suspected release. Upon confirmation of a release, the implementing agency shall be immediately notified, the tank contents emptied, and cleanup measures shall commence. The procedures described in API Publication Recommended Practices for Bulk Liquid Stock Control at Retail Outlets may be used as guidance for compliance with this leak detection method.

54. MANUAL TANK GAUGING. Manual tank gauging shall not be used for tanks over 2,000 gallons. This method consists of liquid level measurements using a gauge stick that is capable of measuring the level of product over the full range of the tank's height to the nearest one-eighth of an inch. Two measurements are taken at the beginning and two taken at the end of at least a 36-hour period during which nothing is added or removed from the tank. The average of the two consecutive ending measurements are subtracted from the average of the two beginning measurements to determine the change in product volume. If the variation between beginning and ending measurements exceeds the following weekly or monthly standards, a leak is suspected. If a leak is suspected, tank and piping tightness testing shall be conducted immediately to confirm the suspected release. Upon confirmation of a release, the implementing agency shall be immediately notified, the tank contents emptied, and cleanup measures shall commence.

a. UST manual tank gauging measurements shall be conducted and recorded in accordance with paragraph 50i for UST's that are used for backup emergency power generators.

b. UST manual tank gauging measurements shall be conducted and recorded weekly and compared to the weekly and monthly manual tank gauging standard below, for existing UST's that are not used for backup emergency power generators.

Manual Tank Gauging Standards:

Tank Capacity (Gallons)	Weekly Standard (One test)	Monthly Standard (Avg. of 4 tests)
up to 550	10 gallons	5 gallons
551 - 1,000	13 gallons	7 gallons
1,001 - 2,000	26 gallons	13 gallons

55. TANK TIGHTNESS TESTING. Volumetric tank testing (also known as "precision," "tank tightness," or "tank integrity" testing) is a leak detection method that operates on the principle that any changes in the volume of fluid within a tank can be interpreted as a leak. Detection of these leaks is difficult because there are many physical parameters which produce volume changes during the test that may be mistaken for leaks.

a. The following sources have been found to contribute to nonleak-related volume changes:

- (1) Thermal expansion and contraction of the product.
- (2) Expansion and contraction of vapor pockets within the tank.
- (3) Structural deformation of the tank.
- (4) Evaporation and condensation within the tank.
- (5) Waves produced by mechanical vibrations and other disturbances.

b. Caution shall be taken to consider these factors when conducting a "tightness" test procedure (i.e., these factors can be mistaken for leaks or these effects can mask an actual leak). In general, even a tightness test on a non-leaking tank will produce volume changes other than zero. All tank and piping tightness testing methods shall be capable of detecting a 0.1 gallon per hour leak rate with a probability of detection of at least 95 percent and a probability of false alarm of no more than 5 percent. Manufacturers of leak detection methods have tested their equipment using a wide variety of approaches. RPMES's shall select a method that meets the approval of the implementing agency.

56. AUTOMATIC TANK GAUGING. Automatic tank gauging systems continuously and automatically measure the product level of the tank system. Automatic gauging systems shall be capable of detecting at least a 0.2 gallon per hour leak rate and the test levels shall be monitored and recorded monthly. EPA-deferred tanks should be monitored in accordance with paragraph 50i and the results maintained in accordance with paragraph 10.

57. RELEASE DETECTION REPORTING REQUIREMENTS. The implementing agency shall be notified within 24 hours of a suspected (e.g., sudden loss of product or unexplained presence of water in the tank) or confirmed release (e.g., tank tightness test failure). All spills and overfills shall be contained and immediately cleaned up. Spills and overfills of less than 25 gallons of petroleum which cannot be cleaned up within 24 hours shall be reported immediately to the implementing agency. In addition, any spills or overfills in excess of 25 gallons shall be reported to the implementing agency within 24 hours and shall be immediately contained and cleaned up. Spills of petroleum of any amount which reach navigable waters and cause a sheen on the surface must be reported to the National Response Center (1-800-424-8802) immediately. Spills and overfills of hazardous substances exceeding the reportable quantity in a 24-hour period must also be reported to the National Response Center immediately. Tank and piping tightness testing shall be performed on tanks suspected of leaks. All leaking UST's

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shall have their contents immediately removed and the tank shall either be repaired (e.g., tighten loose pipe fittings immediately) prior to re-commissioning or removed. Environmental cleanup measures shall be performed as discussed in paragraphs 71 and 72.

58.-59. RESERVED.

CHAPTER 6. UST CLOSURE, REMOVAL, AND DISPOSAL

60. TEMPORARY TANK CLOSURE . Tanks not used for 3 to 12 months, but intended for further use, shall follow requirements for temporary closure:

- a. Leave vent lines open and functioning.
- b. Cap and secure all other lines, pumps, manways, and ancillary equipment.
- c. Unless the UST has been emptied, continue to maintain corrosion protection devices, operate leak detection equipment, and appropriately respond to any releases. Any tank which has been out-of-service for longer than 12 months shall be permanently closed unless the tank has been upgraded or meets the new tank system requirements. The implementing agency may provide an extension of the 12-month temporary closure period, however, a site investigation (see paragraph 62a) must be completed prior to applying for the extension.

61. ABANDONED TANKS AND CLOSURE IN PLACE. Any tank which has been out-of-service for longer than 12 months (abandoned tank) shall be permanently closed unless the tank has been upgraded or meets the new tank system requirements or an extension has been granted by the implementing agency. Tank closure shall be conducted in accordance with paragraphs 62 and 63 as well as with state and local requirements.

If extenuating circumstances do not make tank removal feasible (e.g., UST located under buildings, or parking lots), closure in place may be necessary. Assurance shall be made that the state and locality (i.e., fire marshal) in which the tank is located will allow such closure in place. A site investigation shall be performed to ensure that a release has not occurred at the site. The minimum measures to be used are provided in paragraph 62a. The procedures listed below provide the minimum method for in-place closure. Each state or local regulation shall be assessed to determine its proper method. The procedures are as follows:

- a. Empty and clean the tank by removing all liquids and accumulated sludge. Remove any flammable or combustible liquid from all connecting lines.
- b. Disconnect the suction, return, inlet gauge, and vent lines.
- c. Fill the tank with a state-approved inert absorbent solid material, such as sand or earth fill. Cap all remaining underground piping.
- d. All records pertaining to in-place closure UST's shall be maintained permanently at the UST site or the nearest Airway Facility Sector Field Office.

62. PERMANENT TANK CLOSURE AND REMOVAL PROCEDURES.

a. After it has been determined that a UST shall be permanently taken out-of-service, these tanks shall be physically removed from their underground locations, unless extenuating circumstances do not make this feasible (see paragraph 61). At least 30 days before beginning of permanent closure, the implementing agency shall be notified. A site investigation may be required by the implementing agency to ensure that a release has not occurred at the site. In selecting the sample types, locations, and methods, consideration must be given to the method of closure, nature of stored substance, type of backfill, depth to groundwater, and other factors for appropriately identifying a release. One or more of the following measures may be required to ensure that no release has occurred:

- (1) Portable gas chromatography mapping.
- (2) Analysis of soil core samples for hydrocarbon and/or chemical contamination.
- (3) Analysis of soil and groundwater surrounding the tank for released product; and/or
- (4) another site investigation method that has been approved by the implementing agency. An external release detection method (i.e., vapor monitoring, groundwater monitoring, interstitial monitoring) approved by the implementing agency may satisfy this requirement provided that the method is operating properly at the time of closure and indicates no release has occurred.

b. Removal Requirements. If a release has occurred, then corrective action shall be taken (as described in paragraph 72). The following items may be necessary prior to removal:

- (1) A removal/excavation permit from the state or local governing agency.
- (2) The presence of the local governing personnel to verify proper removal and conditions of tank and adjacent soil.
- (3) Notification to the local fire marshal and the presence of the fire marshal or his/her designee to ensure safety.

c. Removal Procedures.

(1) The procedures described in API Bulletin 1604, Removal and Disposal of Used Underground Petroleum Storage Tanks, may be used as guidance for compliance with tank removal.

(2) Removal will include all supply, return and vent pipelines, storage tank, and contaminated soils.

(3) Refer to the site plan, if available, and identify all utilities which could be encountered while excavating a tank. Otherwise, physically locate utilities and ensure that operational or contract personnel know their locations.

(4) Isolate the tank from its associated system (i.e., pipelines connected to engine generator, waste oil manifold, or other supply sources). Remove all contents of the tank, including fuel, water, and sludge. Ensure proper disposal of these contents in accordance with prevailing state and local disposal regulations. (Vent piping is to remain intact until inerting process is completed.)

(5) If a fire marshal is not present and has not provided inerting procedures, the following method will provide the minimum requirements for the removal of petroleum fumes.

(a) Eliminate any ignition sources, including lit cigarettes, from the immediate vicinity of the tank system. Inert the tank using the following method (or an alternative if approved by the implementing agency and local authority): Remove the tank dip/drop tube and/or sleeve and through this opening insert bottled or solid carbon dioxide (dry ice) at the rate of 20 pounds per 1,000 gallon capacity or any fraction thereof. The dry ice should be broken, cut, or crushed. Avoid skin contact with dry ice because it may produce burns. All vent piping shall be left intact and cannot be removed until the tanks are exposed and ready to be lifted out. Inerting process should last for 12 hours or not less than the time established by the implementing agency. The fill cap shall remain removed during this process, but immediately following the inerting process, the fill cap should be reinstalled to help ensure tank remains in the inerted state. Observe all normal safety precautions regarding flammable vapors.

(b) Once the tank is removed from the ground, the tank is to be secured on the transporting vehicle or holding area in an upright position to help prolong containment of carbon dioxide. If there is evidence that the tank has been leaking, a second inerting procedure (1 hour duration) should be performed before transporting. This is necessary since vapors from the surrounding soil may have entered the tank.

(c) To avoid pressurization of the tank by carbon dioxide expansion induced by ambient temperature rise, the filler cap may remain in place only if it is ensured that the vent opening will remain unobstructed.

(d) Soil samples shall be taken from the soil of each UST removal and tested for contamination. A copy of the laboratory test results shall be forwarded to the implementing agency and kept on file with the removal records.

(e) If a release has occurred, then corrective action shall be taken (as described in paragraph 72.) Tank removal and disposal shall be accomplished in accordance with Federal, state, and local regulations.

63. DISPOSAL PROCEDURES.

a. Tanks. All surplus tanks shall be disposed of in accordance with prevailing local, state, and Federal regulations. Under no circumstances shall a used tank be stored for any lengthy period of time or reinstalled underground by FAA or any other party. Some states may consider tank residuals as hazardous. In that case, hazardous waste manifests will need to be maintained and tracked to ensure proper disposal. In those states which do not require tank disposal in an approved hazardous waste landfill, tanks may be surplus as scrap metal. In either case, the following procedures shall be followed:

(1) Once the tank is gas-free, sufficient holes shall be punctured into the tank to render it unfit for further underground storage use. (When puncturing a tank, do not use an oxygen-acetylene torch or any other method that may produce a spark.) Additional guidance may be obtained from the American Petroleum Institute (API) Bulletin 1604, Removal and Disposal of Used Underground Petroleum Storage Tanks. Refer to appendix 1.

(2) As an added precaution, all disposed or surplus tanks will be labeled in legible letters with the following information:

Tank Has Contained _____ (Insert product name)
Not Suitable for Food or Drinking Water.

b. Contaminated soil. All contaminated soil and soil removed as part of a release/spill cleanup shall be treated or disposed of in accordance with the prevailing implementing agency requirements. Depending upon the implementing agency's determination, cleanup measures may consist of recycling, incineration, bio-remediation, vapor extraction, landfarming, and other appropriate methods or combination of approved methods. The implementing agency shall be consulted prior to using a treatment or disposal method. Disposal of contaminated soil in an EPA-approved hazardous waste landfill shall be considered as a last resort.

c. Records. Records shall be maintained identifying the disposition of each disposed or surplus tank and all contaminated soil in accordance with paragraph 9e. A certificate of destruction or a bill of sale should be used to transfer tank ownership for removed UST's destined for disposal at an approved facility or sold to a scrap dealer. If a bill of sale is used, that document should include the purchaser's acknowledgment that he assumes all liability related to the tank. All removed FST's shall be reported to the Real Estate & Utilities Branch. FAA Form 4800-1, Report of Excess Property, shall be completed for inclusion into the Real Property Records. This process should be coordinated through the Real Property Manager and Real Property Custodian. Additional guidance on these procedures should be obtained from Order 4660.8, Real Property Management and Disposal.

64.-69. RESERVED.

CHAPTER 7. SPILL PREVENTION, RELEASE RESPONSE, AND CLEANUP

70. SPILL PREVENTION/OVERFLOW PROTECTION.

a. All UST systems installed after December 22, 1988, shall use spill prevention equipment (e.g., spill catchment basin) that will prevent product release to the environment when the transfer hose is detached from the fill pipe. Overflows shall be minimized by ensuring that the volume available in the UST system is greater than the volume of product to be transferred. The transfer operation shall be monitored at all times to prevent overflow and spillage. UST systems shall also use overfill prevention equipment that will either (1) automatically shut off flow when the system is 95 percent full or (2) alert the operator by restricting the flow or triggering a high-level alarm when the system is 90 percent full. UST systems installed before December 22, 1988, that do not meet new tank system requirements, and all other existing regulated FST's, shall employ spill prevention/overfill prevention equipment no later than December 22, 1998.

b. All additions of product to the tank shall be visually tracked by an FAA employee, or designate, to observe any spillage. An overflow situation may be considered an unauthorized or accidental release and may be a reportable incident under Federal, state, and/or local regulation. All reasonable steps and precautions to prevent this occurrence shall be taken.

c. All facilities with UST's and AST's shall require an onsite emergency spill containment kit capable of containing at least 25 gallons of spilled product. A spill containment kit is not required to be kept onsite if one is accessible during product delivery and bulk removals of product from the tank (such as during tank maintenance).

71. MINOR CLEANUP PROCEDURES. In the event of an accidental spill of less than 25 gallons of fuel product or less than the CERCLA reportable quantity of a hazardous substance (e.g., less than 5,000 pounds of ethylene glycol/anti-freeze), containment procedures shall commence immediately. Actions include stemming the source of the spill (if possible), containing the extent of spill dispersion, collection of fluid with absorbent material, and removal of visibly contaminated material. All contaminated material shall be disposed of in accordance with Federal, state, and local regulations. Refer to API Bulletin 1628, Underground Spill Cleanup Manual, for supplemental information. If minor cleanups cannot be accomplished within 24 hours, the implementing agency shall be notified immediately.

72. MAJOR CLEANUP PROCEDURES. A major cleanup procedure or a major spill is classified as one which is greater than 25 gallons (reportable quantity) of spilled fuel product, any amount of spilled petroleum which causes a sheen on a navigable waterway, or greater than the CERCLA reportable quantity of a hazardous substance (e.g., greater than 5,000 pounds of ethylene glycol/anti-freeze). All releases or suspected releases/leaks shall be reported to the implementing agency immediately but no later than within 24 hours.

If any questions exist as to whether a spill or release/leak occurred, a site investigation shall be conducted within 7 days to confirm the release, followed by a report to the implementing agency. The site investigation shall be conducted in accordance with 40 CFR 280.50-67. When a fluid loss has been determined through the presence of fuel in a monitoring well, irreconcilable differences in inventory, or the presence of fuel in surrounding soil, the following procedures shall be followed:

a. Spill/Leak Containment. Once a leak, spill, or overfill has been identified, containment procedures shall commence immediately and not later than 24 hours after a release is confirmed. Actions include stemming the source of the leak, containing the extent of the spill or leak dispersion, removing the remaining fluid from the tank, removing the visibly contaminated soil, or implementing any other viable method to prevent further contamination or release into the environment. Fire, explosion, and vapor hazards shall also be identified and mitigated.

b. Reporting requirements. Site personnel shall immediately report any leaks/spills to the FAA regional or center coordinator responsible for managing FST's. In addition, all releases or suspected releases shall be reported to the implementing agency immediately but no later than within 24 hours. Any state and local reporting requirements must also be met.

c. Site Investigation. All treatment and disposal of soils shall be conducted in compliance with state and local requirements. Investigations to determine the presence of free product shall be conducted to initiate any abatement measures. Within 20 days of release confirmation, a report shall be submitted to the implementing agency summarizing initial abatement steps taken. A site investigation including soil sampling (and groundwater sample if required by the implementing agency) shall be undertaken to characterize the vertical and lateral extent of the spill/leak. The results of the site investigation shall be submitted to the implementing agency in accordance with any schedules established by the implementing agency.

(1) The site investigation shall be performed by a qualified professional geologist, engineer, or hydrologist regularly engaged in this practice.

(2) Coordination with EPA and state authorities shall provide the necessary information to determine the scope of testing required. The information may include, but not be limited to, the following:

- (a) Data on the nature and estimated quantity of the release.
- (b) Data from surface and subsurface soil sampling and analyses.
- (c) Data from groundwater and/or surface water sampling and analyses; and/or
- (d) data from available sources and/or the site investigation concerning surrounding populations, water quality and use, well locations, subsurface soil conditions, climate conditions, and land usage.

(3) Whenever free product has been identified at the site, measures shall be taken to remove the contaminant to the maximum extent practicable as determined by the implementing agency. Removal shall be conducted in a manner that minimizes the spread of contamination into previously uncontaminated zones. Within 45 days after confirming a release, a free product removal report shall be submitted to the implementing agency and shall provide at least the following:

(a) Name of the person(s) responsible for implementing free product removal measures.

(b) The estimated quantity, type, and thickness of free product observed or measured in wells, boreholes, and excavations.

(c) The type of free product recovery system.

(d) Location of onsite or off-site discharge during recovery operation.

(e) The type of treatment applied to, and the effluent quality expected from, any discharge.

(f) The steps that have been or are being taken to obtain necessary permits for any discharge.

(g) The disposition of the recovered free product.

(4) All soil and groundwater samples shall be analyzed at a state-approved laboratory. Alternatively, laboratories participating under the EPA Contract Laboratory Program (CLP) may be used. Hydrocarbon action levels shall be determined by each individual state, and it shall be ensured that these levels are met.

(5) The results of the site investigation shall provide guidance for development of a corrective action plan. This report shall include all results of testing and the proposed cleanup methods and procedures which will ensure state and local compliance. The most current version of Order 1050.1, Policies and Procedures for Considering Environmental Impacts, shall be consulted to determine whether the proposed action is categorically excluded or requires preparation of an environmental assessment or environmental impact statement in accordance with the National Environmental Policy Act (NEPA) of 1969. The Office of the Chief Counsel or regional or center counsel is available to assist with this determination.

(6) The corrective action plan shall be submitted to the appropriate state or local authority for review and consent before any cleanup can begin. However, to ensure the minimization of environmental contamination and the promotion of an effective cleanup, measures may be taken to cleanup soil and groundwater before the corrective action plan is approved provided that the following conditions are met:

(a) The implementing agency has been notified of the intention to begin cleanup.

(b) Compliance with any conditions required by the implementing agency has been met.

(c) Self-initiated cleanup measures have been incorporated into the corrective action plan to be submitted to the implementing agency.

73. CORRECTIVE ACTION PLAN. Soil and groundwater cleanup shall be performed in accordance with the EPA or state-approved corrective action plan. American Petroleum Institute Publication 1628, A Guide to the Assessment and Remediation of Underground Petroleum Releases, may be used as additional guidance. Record of spill, corrective action plan, and state release from further cleanup shall be kept on file permanently at the appropriate facility or sector and regional or center office.

74. CONTAMINATED SOIL DISPOSAL. All contaminated soil and soil removed as part of a release/spill cleanup shall be treated or disposed of in accordance with the prevailing implementing agency requirements and approved corrective action plan. Depending upon the implementing agency's determination, cleanup measures may consist of recycling, incineration, bio-remediation, vapor extraction, landfarming, and other appropriate methods or combination of approved methods. The implementing agency shall be consulted prior to using a treatment or disposal method. Disposal in an EPA-approved hazardous waste landfill shall be considered as a last resort.

75.-79. RESERVED.

CHAPTER 8. ABOVEGROUND STORAGE TANKS

80. REGULATED AST's. Currently there is no one comprehensive Federal regulation governing AST's. A variety of statutes and regulations exist that require compliance in a piecemeal fashion and focus primarily on containment rather than structural integrity, monitoring, and testing. The governing regulations for AST's shall be the Oil Pollution Prevention standards, 40 CFR Part 112, also referred to as Spill Prevention Control and Countermeasures (SPCC) regulations. These regulations shall be applicable, but shall not be limited, to FAA facilities with any of the following characteristics:

a. SPCC regulations apply to facilities which are nontransportation-related onshore and offshore facilities engaged in drilling, producing, gathering, storing, processing, refining, transferring, distributing, or consuming oil and oil products which, due to their location, could reasonably be expected to discharge oil in harmful quantities (i.e., in violation of water quality standards or causes a film, sheen, or discoloration of the water surface or emulsion deposited beneath the surface of the water) into or upon the navigable waters of the United States and adjoining shorelines and either:

- (1) have single AST in excess of 660 gallons of oil (see definition of oil); or
- (2) have a total AST storage capacity in excess of 1,320 gallons of oil; or
- (3) have a total underground storage capacity greater than 42,000 gallons of oil.

b. Facilities that must comply with this regulation are required to prepare a site-specific SPCC plan in accordance with 40 CFR Section 112.7. State requirements may be more stringent than the Federal requirements relayed herein. Note: The term "navigable waters" as defined in Section, 112.2k, generally includes every body of water or continuous stream. All AST's, regardless of capacity, shall be equipped with a spill catchment basin as stated in paragraph 87.

c. Facilities shall be surrounded by an FAA standard security barrier fence with lighting and utilize locks to discourage pilferage, as well as sabotage. These safeguards shall meet the specifications contained in Order 1600.6C and the FAA Facilities Physical Security Standards document. Facilities shall be locked when unattended and shall be inspected by the Servicing Security Element (SSE).

81. AST NOTIFICATION. If required by Federal, state, or local regulations, each affected facility shall submit written notice as appropriate. Notification records shall be kept on file at the facility or nearest Airway Facility Sector Field Office.

82. MINIMUM SPCC REQUIREMENTS FOR AST'S. A site specific SPCC plan shall be prepared within 6 months after a facility begins operations and shall be fully implemented as soon as possible, but not later than 1 year after operation. All SPCC plans shall be reviewed and certified by a registered professional engineer. The engineer shall examine the facility and attest that the SPCC plan has been prepared in accordance with good engineering practices. The SPCC plan shall be approved by management at a level which has the authority to commit the necessary resources. The certification of an SPCC plan shall in no way relieve the facility of fully implementing the plan. All state and local regulations pertaining to AST's shall supersede the provisions established in this order.

83. SPCC PLAN PREPARATION AND GENERAL REQUIREMENTS. Each site-specific SPCC plan shall be maintained and kept on site if practicable or if the facility is attended at least 8 hours per day; otherwise the SPCC plan shall be maintained at the nearest Airway Facility Sector Field Office or equivalent facility type. The guidance established in this order should not be used as the sole source for developing site-specific SPCC plans. The ultimate standard for developing the plan is the SPCC regulation, 40 CFR Part 112. The site-specific SPCC plan shall include, but shall not be limited to, the following elements:

- a. Facility owner, type, and location.
- b. Certification of the plan by a registered professional engineer and approved by facility management.
- c. Oil spill history.
- d. Description of physical plant with diagram. The diagram should show the location of all AST and UST locations, the piping above ground, and where known, the underground piping.
- e. AST and UST unit-by-unit capacity, type and quantity of oil stored, and estimates of quantity of oils that could be potentially discharged.
- f. Spill prevention measures, including procedures for routine handling of oil products (e.g., fuel transfer procedures).
- g. Spill controls or appropriate containment in accordance with 40 CFR Section 112.c.
- h. Person(s) designated by management as responsible for oil spill prevention.
- i. Spill countermeasures for spill discovery, response, and cleanup (e.g., facility and contractor capability).

j. Discussion of the facility's conformance with the guidelines established for the preparation and implementation of SPCC plans as found in 40 CFR Section 112.7 (the main points are highlighted in this order). If an alternative secondary containment system is used (i.e., vaulted tanks or double walled tanks), a discussion shall be included in the plan as to why the facility is considered to be in conformance with Section 112.7c of the SPCC regulation (see appendix 7). However, it is important to note that AST's and the SPCC plan shall conform to more stringent state and local regulations. These implementing agencies shall be consulted prior to SPCC plan preparation, especially if an equivalent to Section 112.7c secondary containment system is considered.

k. Prediction of the direction, rate of flow, and total quantity of oil that could be discharged from the facility as a result of each major type of failure.

l. Description of facility/operations security and plans for ongoing coordination with the Security Servicing Element (SSE).

m. Emergency procedures, organized in a manner to make them readily usable in an emergency situation.

n. Description of site-specific SPCC briefings and training.

o. Incident reporting steps, including those required by FAA policy memorandum dated February 21, 1995, from the Associate Administrators for Air Traffic Services and Civil Aviation Security, Subject: Collection and Reporting of Incident Data.

84. PERIODIC SPCC PLAN REVIEW AND AMENDMENT. The site-specific SPCC plan must be reviewed at least every 3 years. The plan must be amended when changes to the facility design, construction, operation, or maintenance affect the facility's potential to discharge into navigable waters. Facility managers are ultimately responsible for evaluating SPCC plans and ensuring that they are up to date. This amendment must be implemented as soon as possible, but not later than 6 months after the change. Amendments must be certified by a registered professional engineer in accordance with Section 112.3 d. Facilities that have experienced a spill in harmful quantities or more than 1,000 gallons of oil into or upon navigable waters of the United States or adjoining shorelines in a single spill event or two spill events within a 12-month period, shall submit the site-specific SPCC plan and other documentation, as listed in Section 112.4 a, to the state water pollution control agency and the EPA Regional Administrator within 60 days. At that time the EPA Regional Administrator may require amendments to the plan if it does not meet the requirements of 40 CFR Part 112 or it is necessary to prevent and contain discharges of oil from the facility.

85. AST SECONDARY CONTAINMENT. In accordance with Section 112.7c, the secondary containment system shall be impervious to oil for 72 hours and shall be constructed so that any discharge from a primary containment system, such as a tank or pipe, will not permeate, drain, infiltrate, or otherwise escape to surface waters before cleanup occurs. One or more of the following (state or local approved) secondary containment or equivalent shall be used as a minimum:

- a. Dikes, berms, or retaining walls.
- b. Curbing.
- c. Culvert, gutters, or other drainage systems.
- d. Weirs, booms, or other barriers.
- e. Spill diversion ponds.
- f. Absorbent materials.
- g. Vaulted or double walled tank system (possible alternative secondary containment system; see paragraphs 83j and 86 and consult implementing agencies).

86. ALTERNATIVE AST SECONDARY CONTAINMENT. It is suggested that:

- a. Smaller shop-fabricated AST systems, as indicated by EPA memorandum, dated April 29, 1992 (see appendix 7), may be used as an alternative secondary containment to the options listed in Section 112.7c (see paragraph 85). In the EPA memorandum, the Assistant Administrator of the Office of Solid Waste and Emergency Response addressed this issue and indicated:

We believe that for smaller shop-fabricated AST's some alternative AST systems that include adequate technical spill and leak prevention options such as overfill alarms, flow shutoff or restrictor devices, and constant monitoring of product transfers generally would allow owners and operators of facilities to provide protection of navigable waters substantially equivalent to that provided by secondary containment as defined in 40 CFR Section 112.7c. For example, small double walled AST's, when used with equipment and procedures described in this guidance, generally would provide substantially equivalent protection of navigable waters under Section 112.7c of the SPCC regulation when the inner tank is an Underwriter's Laboratory-listed steel tank, the outer wall is constructed in accordance with nationally accepted industry standards (e.g., those codified by the American Petroleum Institute, the Steel Tank Institute, and the American Concrete Institute), the tank has overfill prevention measures that include an overfill alarm and an automatic flow restrictor or flow shut-off, and all product transfers are constantly monitored.

b. State and local implementing agencies shall be consulted prior to SPCC plan preparation. EPA requirements shall be implemented at a minimum as well as state or local requirements. An owner/operator of a facility shall ensure that the transfer operation is monitored constantly to prevent overfilling and spilling, consistent with Section 280.30a. The overfill alarm and automatic flow restrictor or flow shut-off device shall be consistent with the performance standards for those devices described in Section 280.20c of the EPA Underground Storage Tank regulation, 40 CFR Part 280. Specifically, the overfill prevention equipment shall:

(1) Automatically shut off flow into the tank when the tank is no more than 95 percent full; or

(2) alert 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; or

(3) restrict flow 3~ minutes prior to overfilling, alert the operator with a high-level alarm 1 minute before overfilling, or automatically shut off flow into the tank so that none of the fittings located on the top of the tank are exposed to product due to overfilling.

87. AST DESIGN CHARACTERISTICS. With the approval of state and local implementing agencies, it shall be an FAA policy to install AST systems of vaulted or double-walled design type only, unless an alternative system is otherwise approved by the ANS FST Program Manager. These design types can be inspected regularly and monitored more effectively. These tanks shall provide for secondary containment of the piping, interstitial monitoring of the tank and piping system, automatic tank gauging, and automatic line leak detection (see paragraph 45). New fill pipes shall include locking caps consistent with the specifications in Order 1600.6C, Physical Security Management Program. The AST shall have an overfill alarm system, a spill catchment basin (regardless of tank size), and a spill containment kit capable of containing at least 25 gallons of spilled product. Note: A spill containment kit is not required to be kept onsite if one is accessible during product delivery and bulk removals of product from the tank (such as during tank maintenance). In addition, the AST design shall be capable of integrity testing (i.e., hydrostatic testing, visual inspection, or a system of nondestructive shell thickness testing). The AST tank system design shall be expandable for the purpose of remote maintenance monitoring. Release monitoring shall be inspected, tested, and recorded in accordance with the site-specific SPCC plan.

88. AST RECORDKEEPING. Inspections, all testing results, and release monitoring records shall be maintained at the facility or nearest Airway Facility Sector Field Office for at least 5 years. All FST installations (new installations and replacements) and removed FST's shall be reported to the Real Estate & Utilities Branch on the FAA Form 4800-1, Report of Excess Property and shall be completed for inclusion in the Real Property Records. This process should be coordinated through the Real Property Manager and Real Property Custodian. Additional guidance on these procedures should be obtained from Order 4660.8, Real Property Management and Disposal.

89. AST PRODUCT RELEASE REPORTING REQUIREMENTS. The National Response Center shall be notified at 800-424-8802 when a discharge occurs into or upon navigable waters and the discharge either (a) violates applicable water quality standards or (b) causes a film or sheen upon or discoloration of the surface of the water or adjoining shorelines or causes a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shorelines. All releases, spills, and overfills shall require implementation of the site-specific SPCC plan and appropriate cleanup procedures as discussed in Chapter 7, Spill Prevention, Release Response, and Cleanup.

90. AST TRAINING AND SPILL PREVENTION. Training exercises in accordance with the site-specific SPCC plan shall be conducted annually in the operation and maintenance of equipment to prevent discharges of oil. The facility manager shall ensure that spill prevention briefings are conducted for operating personnel annually to ensure adequate understanding of the SPCC plan for the facility. These briefings shall highlight and describe known spill events or failures, malfunctioning components, and recently developed precautionary measures. Spill prevention measures shall be conducted in accordance with the site-specific SPCC plan and appropriate procedures in paragraph 70.

91. INSTALLATION OF FIRE EQUIPMENT. Many local fire authorities may require AST systems to have fire protection equipment installed. Minimum requirements may consist of a few hand-held dry-powder extinguishers at convenient locations or foam spray equipment. All state and local requirements shall be met prior to operation.

92. AST INTEGRITY TESTING. AST's shall be integrity tested every 10 years using such techniques as hydrostatic testing, visual inspection, or a system of nondestructive shell thickness testing. Tank supports and foundations shall be included in these inspections.

93. FACILITY RESPONSE PLANS. The EPA has indicated that:

a. The Oil Pollution Prevention regulation, 40 CFR Part 112 (amended July 1, 1994), requires owners and operators to prepare Facility Response Plans for those facilities that meet "substantial harm" criteria or if determined by the EPA Regional Administrator to be a "substantial harm" facility after considering a number of factors. All FAA facilities shall fully comply with the requirements of 40 CFR Part 112.

b. Criteria for Facility Response Plans dictates that facilities are required to submit a facility response plan to the EPA Regional Administrator in accordance with 40 CFR Section 112.20 for those facilities that meet the following "substantial harm" criteria:

(1) The facility transfers oil over water to or from vessels and has a total oil storage capacity greater than or equal to 42,000 gallons; and/or

(2) The facility's total oil storage capacity is greater than or equal to 1 million gallons, and one of the following is true:

(a) The facility does not have secondary containment for each aboveground storage area sufficiently large to contain the capacity of the largest aboveground oil storage tank within each storage area plus sufficient freeboard to allow for precipitation;

(b) The facility is located at a distance (as calculated using the appropriate formula in Appendix C of 40 CFR Part 112 or a comparable formula) such that a discharge from the facility could cause injury to fish and wildlife and sensitive environments;

(c) The facility is located at a distance (as calculated using the appropriate formula in Appendix C of 40 CFR Part 112 or a comparable formula) such that a discharge from the facility would shut down a public drinking water intake; or

(d) The facility has had a reportable oil spill in an amount greater than or equal to 10,000 gallons within the last 5 years.

c. Regional (EPA) Administrators also have the authority to determine that a facility is otherwise considered a "substantial harm facility," and required to submit a Facility Response Plan, based on relevant site-specific characteristics and environmental factors (within parameters specified in 40 CFR Part 112). Facilities that do not currently meet the Facility Response Plan criteria who change operations such that the change triggers the established criteria are required to submit the Facility Response Plans prior to recommencing operations. Newly constructed facilities that commence operation after August 30, 1994, and that meet the criteria above (Criteria for Facility Response Plans) must submit facility response plans to the EPA Regional Administrator prior to the start of operations.

d. All facilities that are otherwise regulated under 40 CFR Part 112 that do not meet the facility response substantial harm criteria shall maintain a certification of applicability of the substantial harm criteria form (see appendix 10) and include it as part of the site-specific SPCC plan.

94.-99. RESERVED.