
DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
CEGS-15177 (05/99)

Superseding
USAF 15177 (05/98)

GUIDE SPECIFICATION FOR CONSTRUCTION

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SECTION 15177

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05/99

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GUIDE SPECIFICATION FOR CONSTRUCTION

SECTION 15177

PETROLEUM TANK CLEANING
05/99

NOTE: This guide specification covers the requirements for cleaning tanks whenever a new Jet Fuel Piping system is flushed or when modifying an existing jet fuel storage tank. This guide specification is to be used in the preparation of project specifications in accordance with ER 1110-345-700 for military construction and in accordance with ER 1110-2-1201 for Civil Works construction.

NOTE: THIS SPECIFICATION SECTION SHALL BE USED WHENEVER A NEW JET FUEL PIPING SYSTEM IS FLUSED OR WHEN MODIFYING AN EXISTING JET FUEL STORAGE TANK.

PART 1 GENERAL

Attachments: A - Contractors Qualification Statement

1.1 REFERENCES

NOTE: Issue (date) of references included in project specifications need not be more current than provided by the latest change (Notice) to this guide specification. During the reference reconciliation process, SPECSINTACT will automatically remove references from this paragraph that have been removed from the text.

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN PETROLEUM INSTITUTE (API)

API 2015 (1994) Safe Entry and Cleaning of Petroleum Storage Tanks, Planning and Managing Tank Entry

From Decommissioning Through
Decommissioning.

AIR FORCE MANUALS (AFM)

AFM 85-16 Maintenance of Petroleum Systems

AIR FORCE OCCUPATION SAFETY AND HEALTH STANDARDS (AFOSHSTD)

AFOSHSTD 48-137 (1998) Respiratory Protection Program

AFOSHSTD 91-38 (1997) Hydrocarbon Fuels - General

AFOSHSTD 91-66 (1977 General Industrial Operations

NATIONAL FIRE PROTECTION AGENCY (NFPA)

NFPA 70 (1999) National Electrical Code

OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA)

29 CFR 1910.28 Safety Standards for Scaffolding

AFOSH Standards 127-7, 127-40, 161-1, and 127-66.

UNITED STATES CODE (USC)

USC Title 42 The Public Health and Welfare

1.2 CONTRACTOR QUALIFICATIONS

All prospective contractors shall submit a contractor's qualification
(see Attachment A).

1.3 SUBMITTALS

**NOTE: Submittals must be limited to those
necessary for adequate quality control. The
importance of an item in the project should be one
of the primary factors in determining if a
submittal for the item should be required.**

**Indicate submittal classification in the blank
space using "GA" when the submittal requires
Government approval or "FIO" when the submittal is
for information only.**

Government approval is required for submittals with a "GA" designation;
submittals having an "FIO" designation are for information only. The
following shall be submitted in accordance with Section 01330 SUBMITTAL
PROCEDURES:

SD-08 Statements

Contractor's Qualification Statement; GA.

Contractor's Qualification Statement shall include:

The name and qualifications of the Contractor's Representative who will be in charge of the work and be present at the job site when any tank work is being accomplished.

A complete list of equipment, with adequate nomenclature by item, to be used or available at the job site.

Contractor's Plan of Operations.

1.4 GOVERNMENT FURNISHED SERVICES

1.4.1 Fuel Removal

The base fuel officer will remove the fuel within 18 inches of the bottom with the fixed pumping system. The Contractor shall remove the remaining fuel by pumping into a Government tank truck. Any fuel remaining in the tank, after the tank has been released to the Contractor, shall be considered as contaminated and disposed of by the Contractor. The Contractor shall remove the fuel from the base and dispose of it in a manner consistent with applicable pollution control regulations, and all local, state, and federal EPA regulations.

1.4.2 Utilities

Water and electricity will be made available to the Contractor as described in [] [Section 00800 SPECIAL CONTRACT REQUIREMENTS].

1.4.3 Electrical Equipment Approval

All electrical equipment and conductors used by the Contractor within 50 feet of any fuel pipes or storage tanks shall be approved for use in Class 1, Division 1, Group C, hazardous areas.

1.5 TANK ENTRY EQUIPMENT

The Contractor shall furnish all necessary clothing and equipment required for the work and protection of personnel, regardless of whether they enter a tank or handle materials outside the tank. Before any tank cleaning work is performed, the Contractor's equipment will be inspected and approved at the job site, by the Contracting Officer, to insure that the equipment includes, but is not necessarily limited to the following:

1.6.1 Air Movers

Air-movers, either explosion proof and electrically operated, or air driven, eductor type only. One air driven type is listed in the MSA catalog as a "Lamb Air-Mover Ventilator." All air-movers used will be the educing type capable of educing vapors from the tank. Air-movers blowing air into the tank will not be used during the vapor freeing or cleaning periods of work.

1.5.2 Combustible Gas Indicator

One (1) combustible gas indicator.

1.6.3 Lights

Explosion proof portable battery powered lights (Mining Enforcement and Safety Administration approved).

1.5.4 Miscellaneous Supplies

Buckets for soapy water, adequate supply of a denatured alcohol, and cotton swabs.

1.7 PRECAUTIONS TO FOLLOW

1.7.1 Tank Cleaning

All tanks being cleaned, regardless of the type of fuel stored therein, shall be considered leaded and explosive until all sludge and loosely adhering rust scale have been removed.

1.6.2 Tank Entry Permission

Prior to entry into any tank, Contractor will obtain permission from the Contracting Officer and the liquid fuels maintenance officer. This permission will be granted only when , or after:

(a) The Contractor's qualified supervisor is present.

(b) The contractor personnel have been briefed by the supervisor on what is to be done; what each employee is to do in the event of an emergency; and how long each man or cleaning crew will remain in the tank under normal conditions.

(c) All required equipment is approved and properly located.

(d) Personnel are equipped with properly fitted protective equipment.

(e) The entire area adjacent to the tank is secured.

(f) Air-movers, eductor type only, have been operating continuously for at least one (1) hour, and will continue to operate throughout the entire period personnel are cleaning the tank. The Contracting Officer may allow air-movers to be turned off after one (1) hour with continuous monitoring of the vapor level below 20 percent of the Lower Explosive Limit (LEL).

1.6.3 Physical Contact

Physical contact shall be avoided and maximum care shall be taken to prevent contamination of water supplies or streams. Physical contact with leaded sludge is dangerous due to the toxicity of the lead alkyl compounds, either in liquid or gaseous state.

a. Tests for lead in the air above any sludge which is deposited on the open ground have shown that values are low at all times, even with no apparent wind. The sludge, therefore, is safe with regard to air contamination as soon as it is spread in the open. Industrial standards of 20 ppm of organic lead is the limit in the sludge that can be considered safe after sludge has been weathered. If weathering is a treatment process, it must be done in accordance with RCRA. If this disposal method is used, maximum care shall be

taken to insure that there is no runoff to contaminate water supplies or streams before the end of the weathering period.

b. There shall be no smoking; matches or cigarette lighters shall not be carried by the tank crew or other persons entering the tank area. Brooms or brushes that have plastic synthetic bristles shall not be used.

c. All Government equipment shall be protected against dirt, water, chemical, or mechanical injury.

1.7 TANK VENTILATION

1.7.1 Air Movers

Air-movers of the eductor type described earlier shall be used. Tank fuel vapors are heavier than air and except on hot days (80 Degrees F. to 110 Degrees F.), accumulate in the bottom portion of the tank. Blowing air into the tank tends to "stir" the vapors, requiring a long period of time before any appreciable drop in vapor-air ratio is noted. Eductor type air-movers, with flexible oil proof canvas hoses attached, inserted in the tank near the bottom will educt vapors from the tank in a short period of time. On hot days, a fog type water spray over the opening, admitting fresh air into the tank will condense vapors and facilitate removal. All tank openings, except the one used to insert the oil proof flexible hose and the one admitting fresh air into the tank, should be kept closed until workmen have entered the tank.

1.7.2 Precautions

Although eductors may be used through bottom manholes on an above ground tank, it is preferred that top manholes or vent piping be used on above ground tanks. Using eductors on top of the tank will allow for dissipation of the vapors, thus preventing them from settling in low places at ground level. All other manholes and tank openings should be closed when the tank is initially ventilated. They should be opened, however, when work is started to take advantage of the light these openings let into the tank.

1.8 PREPARATION AND TANK CLEANING

1.8.1 Blind Flanges

The Contractor shall provide and install blind flanges or spectacle blinds on each pipeline connected to the tank. When blind flanges are used, they will be placed on the end of the pipe and not on the tank opening. Spectacle blinds shall, if used, be inserted between the tank valve and the flange nearest the tank. Gaskets shall be inserted on both sides of the spectacle blind. CAUTION: DO NOT REMOVE VALVES OR DISCONNECT PIPING FROM ANY TANK UNTIL POSITIVELY CERTAIN THE LINE HAS BEEN EMPTIED OF FUEL. DO NOT REMOVE BLIND OR SPECTACLE FLANGES UNTIL ALL INTERIOR WORK IS COMPLETE AND THE SYSTEM IS READY TO BE PUT BACK INTO SERVICE.

1.8.2 Tank Survey

The Contractor, by physically surveying the area within 50 feet of the tank to be entered or cleaned, shall assure that no vapors are present in pits or low places, and that unauthorized personnel are cleared from

the area. The Contractor shall provide this area with "No Smoking" signs. All personnel entering the area shall leave all cigarettes and flame producing devices at a previously determined location.

1.8.3 Equipment Placement

The Contractor shall place all equipment upwind of the tank openings. Equipment shall be placed at the highest elevation possible; never in an area lower than the surrounding terrain. Internal combustion engine driven equipment shall be equipped with flame arresters and protected ignition systems and must be positioned a minimum of 50 feet from an open manhole.

1.8.4 Contractor Responsibility

The Contractor shall be responsible for reviewing the drawings of the tank to be cleaned. The Contractor shall brief his personnel on the location of floor pits, sumps, or other tank appurtenances considered hazardous to personnel. The Contractor shall work in accordance with API 2015, AFM 85-16, AFOSHSTD 48-137, AFOSHSTD 91-38, and AFOSHSTD 91-66, OSHA 29 CFR 1910.28 and USC Title 42 Section 6901. Whenever the information contained herein conflicts with the previously listed standards, the information here shall govern.

1.8.5 Lighting

Explosion proof battery powered safety flashlights, or safety lanterns may be used inside the tank or within 50 feet of the tank during any tank cleaning operation. Explosion proof lights approved for use under Class I, Division I, Group C and D, as defined by NFPA 70, may be used inside the tank during tank coating operations.

1.8.6 Cleaning

After waste fuel has been removed from the tank, and with personnel wearing protective equipment, the bottom of the tank and three (3) feet up on the sides shall be scraped until all loosely adhering rust and scale have been removed and placed with waste fuel removed from the tank. The remainder of the tank sides, and all metal supports and braces, shall be washed down with a high pressure water hose until the water flowing or pumped out of the tank is clean. Decks or tops of vertical tanks shall also be washed.

1.8.7 Water Usage and Disposal

Water used to wash down a scraped tank shall be contained. It may be channeled or pumped from the tank through a spillway into a drainage system having an oil/water separator of adequate capacity. The discharge effluent containing the petroleum products is processed in this manner to prevent the fuel products from entering any above or below ground water sources. All water shall be discharged into the sanitary sewer or industrial waste only. The separated petroleum products shall be disposed of with the fuel tailings by the Contractor. Running or pumping waste fuel into natural waterways, sewers, storm drains, or on to ground is prohibited.

1.8.8 Floor Drying

After the tank has been washed, the floor will be dried out.

1.8.9 Potential Explosive Vapors

Pipes used for center poles, and braces, pontoons, and leaking bottoms are a potential source of explosive vapors even after then tank is cleaned. The tank may be determined to be vapor free below four (4) percent of lower explosive limit; but after one (1) or two (2) hours, explosive readings may again be obtained from these sources. Because of this, the Contractor shall take readings at least every one-half (1/2) of an hour when working in tanks after they have been cleaned and each floating roof or pan pontoon shall be checked individually with a combustible gas indicator.

1.9 CLEANUP AND ACCEPTANCE

After all water and sludge materials have been removed from the tank and the Contracting Officer has inspected and accepted the tank cleaning, all valves, piping, manhole covers, etc. (removed at start of the job to facilitate ventilation), shall be reinstalled with new gasket material (resistant to aircraft fuel) and shall not be less than the thickness of the gasket removed. The entire tank area shall be restored to its original condition.

1.10 STENCILING TANK

At the completion of the exterior tank painting work, Contractor shall stencil the tank in 3/4- to 1-inch letters adjacent to the manhole openings with the essential information as shown in the following example:

DATE CLEANED:	1/16/71
CONTRACTOR:	JOHN DOE
ADDRESS:	1017 CHESTNUT STREET CHICAGO, ILLINOIS

1.11 AIR FORCE APPROVED LIST OF QUALIFIED PETROLEUM TANK CONTRACTORS

All prospective contractors must submit a contractor's qualification statement similar to attachment A. To qualify, the Contractor must:

- a. Show proof of having completed similar work on three (3) previous projects. The work falls into three (3) categories; tank entry, coating, and petroleum system welding.
- b. Submit proof that welders are API certified.
- c. Certify that before commencing work, the contractor supervisor on the job site will be thoroughly familiar with JP-4 fuel characteristics and worker safety requirements.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

ATTACHMENT A

CONTRACTORS QUALIFICATION STATEMENT

1. Name of Firm:
2. State briefly why firm is qualified to clean strap, calibrate, repair, or coat petroleum storage tanks.
3. List the size of tank(s) the firm has successfully completed work on; also, give the location of each tank, the owner's name, and the name of a person(s) that may be contacted regarding the tank(s) listed.
4. Since gauge charts are to be individually certified by the firm, what guarantee backs the firm's certificate?
5. The Owner/Owners must furnish the following statements, signed and dated:

(NOTE: If the statements to Items a and b are positive, furnish a detailed explanation.)

a. I (We) _____ have (have not) has a loss of life or injury requiring hospitalization of any employee of this or any other contracting firm that I (we) have owned or managed separately or together.

b. I (We) _____ have (have not) been involved in a contract where a loss of property occurred under this or any other company name.

c. I (We) _____ have completed tank cleaning, repair, or calibration of the following Department of Defense installations. This list must be complete for the past eight (8) years.

d. I (have)(will obtain prior to bidding) a copy of the American Petroleum Institute - API 2015, Cleaning Petroleum Storage Tanks.

6. List the make and model numbers of the following pieces of equipment:
 - a. Respirators.
 - b. Safety Harness.
 - c. Combustion Gas Indicators.
 - d. Air Compressors.
 - e. Air Purifiers.

7. Furnish at least three (3) letters of competency from contracts accomplished within the last five (5) years.

I hereby certify the foregoing statements are true and complete.

-- End of Section --