



Designation: ~~E3225--20~~ E3225 - 24

## Standard Practice for ~~Performing a Liquid Test of Spill Prevention Equipment and Containment Sumps Used for Interstitial Monitoring of Piping by Visual Examination~~ Visual Examination of Containment Sumps<sup>1</sup>

This standard is issued under the fixed designation E3225; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

### 1. Scope

1.1 This practice describes a *visual examination* to determine if a containment sump has been *compromised* and to identify any *compromised* components.

1.2 United States of America federal regulations found in 40 CFR 280 address inspection and testing of *spill prevention equipment*, *spill prevention equipment* and *containment sumps* are tested periodically to ensure the equipment is used for piping interstitial monitoring. The liquid tight by using vacuum, pressure, or liquid testing pursuant to United States of America federal regulations found in § 40 CFR 280.35 and inspection requirements include the following:

1.2.1 Spill prevention equipment and containment sumps used for piping interstitial monitoring must be tested at least once every three years to ensure the equipment is *liquid tight* by using vacuum, pressure, or *liquid* testing.

1.2.2 *Containment sumps* must be inspected annually.

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1.2.3 *Spill prevention equipment* must be inspected every 30 days.

1.2.4 The authority having jurisdiction may have different or more frequent inspection and testing requirements.

1.3 The *visual examination* described in this practice addresses the inspection requirements of:

1.3.1 the annual inspection of *containment sumps*;

1.3.2 the 30 day walk through inspection for *spill prevention equipment*; and

1.3.3 the *visual examination* performed prior to conducting a test of the *spill prevention equipment* or *containment sumps* used for *interstitial monitoring*.

1.4 This practice ~~provides is not a liquid~~ recognized test by visual examination conducted by a professional inspector to determine if the *spill prevention equipment* and/or *containment sumps* used for *interstitial monitoring* are *liquid tight*.

<sup>1</sup> This practice is under the jurisdiction of ASTM Committee E50 on Environmental Assessment, Risk Management and Corrective Action and is the direct responsibility of Subcommittee E50.01 on Storage Tanks.

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1.5 The user is expected to have knowledge of *UST* installation procedures and *UST* operational, maintenance and testing requirements of § 40 CFR 280 et seq, related to the tasks performed.

1.6 Section 6 provides the recommended minimum qualifications and educational requirements of a professional the inspector. The authority having jurisdiction may have additional certification requirements.

1.7 This practice offers a set of instructions for performing one or more specific operations. This document cannot replace education or experience and should be used in conjunction with professional judgment. Not all aspects of this practice may be applicable in all circumstances. This ASTM standard is not intended to represent or replace the standard of care by which the adequacy of a given professional service must be judged, nor should this document be applied without consideration of a project's many unique aspects. The word "Standard" in the title means only that the document has been approved through the ASTM consensus process.

1.8 The values stated in either SI units or inch-pound units are to be regarded as standard. ~~No other units of measurement are included in this standard, separately as standard. The values stated in each system are not necessarily exact equivalents; therefore, to ensure conformance with the standard, each system shall be used independently of the other, and values from the two systems shall not be combined.~~

1.9 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.* Hazards known to this practice are identified in Section 8.

1.10 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

## 2. Referenced Documents

2.1 *United States of America Environmental Protection Agency (EPA):*<sup>2</sup>

§40 CFR §280 part 280 Technical standards and corrective action requirements for owners and operators of underground storage tanks (UST)

§40 CFR §280.20 Performance standards for new UST systems.

§40 CFR §280.35 Periodic testing of spill prevention equipment and containment sumps used for interstitial monitoring of piping and periodic inspection of overfill prevention equipment. 5-24

§40 CFR §280.36 Periodic operation and maintenance walkthrough inspections 9709-c933acee49c4/astm-e3225-24

2.2 *United States of America Occupational Safety and Health Administration (OSHA):*<sup>3</sup>

§29 CFR §1910.120 Hazardous waste operations and emergency response

§29 CFR §1910.146 Permit-required confined spaces

§29 CFR §1910.399 Class I locations

2.3 *CERCLA:*<sup>2</sup>

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980. §101(14)

## 3. Terminology

3.1 *Definitions:*

3.1.1 *compromised, adj*—a loss of structural integrity or diminished ability to perform as designed.

3.1.2 *containment sump, n*—~~a subsurface liquid tightsump container designed to contain regulated substances leaked from the designed to be primary fuel pathliquid tight~~ of an underground storage tank system until the regulated substance is detected and removed, including components commonly known as transition sumps, submersible turbine pump (STP) sumps, under dispenser containment (UDC) sumps and piping sumps.

3.1.2.1 *Discussion—*

Includes components commonly known as *spill containment equipment*, transition *sumps*, submersible turbine pump (STP) *sumps*, under dispenser containment (UDC) *sumps* and piping *sumps*.

<sup>2</sup> Available from United States Environmental Protection Agency (EPA), William Jefferson Clinton Bldg., 1200 Pennsylvania Ave., NW, Washington, DC 20460, <http://www.epa.gov>.

<sup>3</sup> Available from Occupational Safety and Health Administration (OSHA), 200 Constitution Ave., NW, Washington, DC 20210, <http://www.osha.gov>.

3.1.3 *liquid, n*—a state of matter characterized by the material flowing freely, with a definite volume but indefinite shape which is determined by its container, and which is difficult to compress.

3.1.3.1 *Discussion*—

*liquid* does not include powders or other materials that are composed entirely of solid particles.

3.1.4 *liquid test, n*—the procedure to determine that a *containment sump* is *liquid tight*.

3.1.5 *liquid tight, adj*—the ability of ~~sump~~ to contain a *regulated substance* leaked from the *primary fuel path* of a UST system until the *regulated substance* is detected and removed.

3.1.6 *naked eye, n*—visual perception unaided by a magnifying or light-collecting optical instrument, such as a telescope or microscope and includes vision corrected to normal acuity using corrective lenses.

3.1.7 *primary fuel path, n*—that portion of the UST system that routinely contains a *regulated substance*, including the tank, piping, dispensers, pumps and related components.

~~3.1.8 *professional inspector, n*—an individual that satisfies independence, education, examination, experience, insurance and licensing, certification or registration requirements of the authority having jurisdiction, to perform a *liquid test* of *spill prevention equipment* and *containment sumps* used for interstitial monitoring of piping by *visual examination*.~~

3.1.8 *regulated substance, n*—(1) Any substance defined in section 101(14) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980 (but not including any substance regulated as a hazardous waste under subtitle C); and (2) Petroleum, including crude oil or any fraction thereof that is liquid at standard conditions of temperature and pressure (60 °F and 14.7 lb/in.<sup>2</sup> absolute). The term regulated substance includes but is not limited to petroleum and petroleum-based substances comprised of a complex blend of hydrocarbons, such as motor fuels, jet fuels, distillate fuel oils, residual fuel oils, lubricants, petroleum solvents, and used oils.

~~3.1.9 *spill prevention equipment, n*—*liquid tight containment sump* containment basin around the fill pipe of a UST designed to prevent release of *regulated substance* UST, to the environment when the transfer hose is detached from the fill pipe, including components commonly referred to as a catch basin, spill bucket or spill containment.~~

~~3.1.10 *sump, n*—when used alone means a pit or hollow spill prevention equipment designed to create working space around, or containment sump of below ground tank system components.~~

~~3.1.11 *underground storage tank, UST, n*—a tank or combination of tanks and any underground piping connected to the tank or tanks that has at least 10 % of its combined volume underground.~~

~~3.1.12 *visual examination, n*—the critical *naked eye* observation of a *containment sump* by a *professional inspector* *containment sump* to determine is capable of performing as designed or if the *containment sump* is *has liquid* been *tight* *compromised*.~~

#### 4. Summary of Practice

4.1 Perform a *liquid visual examination* test according to procedures in Section 7.

4.2 Make a pass or fail determination according to the procedures in 7.5.

4.3 Report the results as in Section 9.

#### 5. Significance and Use

5.1 All *liquid* and debris in a *containment sump* should be removed and managed properly.

5.2 ~~Periodic testing of *spill prevention equipment* *Liquids* and introduced into a *containment sump* *sump* used for interstitial~~

monitoring of piping is required by for testing purposes may come in contact with US EPA regulated substances regulation § 40 CFR §280.35 that have leaked from the primary UST system.

5.2.1 Test liquids in contact with regulated substances may require response and corrective action if leaked from a containment sump during testing. 40 CFR §280.12 defines release as “any spilling, leaking, emitting, discharging, escaping, leaching or disposing from an UST into groundwater, surface water or subsurface soils.”

5.2.2 For handling and disposal consideration for liquids removed from containment sumps, see [Appendix X1](#).

5.3 ~~The spill prevention equipment visual examinations and may containment identify sumps compromised used for interstitial monitoring of piping must be tested at least once every three years to ensure the equipment is in conditions that warrant repair or response to reduce the probability of liquid tight release by of using vacuum, regulated substance pressure, or liquid testing according to § 40 CFR §280.35. Under this practice, an annual test is required to the environment.~~

5.3.1 Visual examinations should be performed prior to the introduction of liquids in to a containment sump to reduce the potential risk of a release of regulated substance to the environment during liquid testing methods.

5.3.2 Frequent visual examination of containment sumps between three-year test intervals is a proactive loss preventative measure that may identify compromised equipment before the equipment fails.

5.3.3 Visual examinations do not apply vacuum, or pressure, stress to containment sump components, nor do visual examinations introduce liquids into containment sumps which may come in contact with regulated substances that must be properly handled pursuant to regulations of the authority having jurisdiction.

5.3 The phrase liquid tight is an ambiguous expression with the acceptable leak rate dependent upon the nature of the liquid and the purpose of the evaluated material. This practice defines liquid tight.

5.3.1 There is no minimum containment capacity or leak rate criteria for spill prevention equipment or containment sumps used for interstitial monitoring of piping.

5.4 Spill prevention equipment and containment sumps are designed to contain a regulated substance that is released from the primary fuel path of a UST system including leaks that occur when the delivery hose is disconnected from the fill pipe, until the regulated substance is detected and removed. There is no established ~~maximum~~ leak rate, capacity requirement or holding time.

5.5 Spill prevention equipment and containment sumps must be properly installed pursuant to §40 CFR §280.20 in accordance with a code of practice developed by a nationally recognized association or independent testing laboratory and in accordance with the manufacturer’s instructions. Properly installed spill prevention equipment and containment sumps will perform as designed unless one or more components ~~have become~~ compromised. ~~Indications~~ Many indications of component compromise that could ~~impact the lead to~~ capability of containment sump failure to remain liquid tight allowing a sump release to remain liquid tight of liquid during a liquid test, are visually observable.

5.6 This practice is used to perform a liquid test visual examination of containment sumps to determine if the containment sumps are liquid tight, capable of containing a regulated substance leaked from the primary fuel path of the UST system until the regulated substance is detected and removed.

5.7 ~~Liquid testing~~ Visual by visual examination is the process of using the naked eye, alone or in conjunction with various aids such as portable lighting, camera, or mirrors, as the sensing mechanism from which a determination is made about the condition of the containment sump being inspected.

5.8 This practice is only applicable to ~~spill prevention equipment and containment sumps~~ after installation testing is complete. Properly installed ~~spill prevention equipment~~ liquid tight and containment sumps will remain liquid tight unless one or more components become compromised.

5.9 ~~This practice does not address all of the periodic operation and maintenance walkthrough inspections required by §40 CFR §280.36 will not comply with this practice unless conducted by a professional inspector and all requirements of Section §280.36.7 are addressed.~~

5.10 This practice is not applicable where components are not observable.

5.11 This practice does not supersede requirements developed by the manufacturer of items tested, if any requirements exist.

5.12 This practice does not supersede requirements required by the authority having jurisdiction, if any requirements exist.

## 6. Personnel Qualifications

~~6.1 Requirements—*Liquid tests* *Visual examinations* by visual examination utilize the *naked eye*, alone or in conjunction with various aids such as portable lighting, camera, or mirrors, as the sensing mechanism from which judgments are made about the condition of the component being tested. Test results inspected. Results may be impacted by *professional-inspector* qualifications, visual accessibility (postural limitations to performance) and lighting. Minimum education, training and experience requirements in conjunction with independence, examination and insurance requirements establish the necessary qualifications to demonstrate the skills and reliability to apply the judgment required for a professional inspector.~~

~~6.2 Conflict of interest—*Liquid tests* by *visual examination* involve professional judgment. To maintain objectivity, a *professional inspector* should avoid the appearance and actuality of a conflict of interest. A *professional inspector* should not be the owner or operator of the UST system, an employee of the owner or operator of the UST system, or the person with responsibility for the operation or maintenance of the UST system.~~

~~6.2 Minimum Qualifications:—The authority having jurisdiction may have specific licensing or qualification requirements for testing or inspecting *containment sumps*. The inspector must comply with the qualification requirements of the authority having jurisdiction, if any requirements exist.~~

~~6.3.1 Satisfies the minimum qualifications of the authority having jurisdiction as a UST compliance inspector and demonstrates the knowledge and skills necessary to perform a *liquid test* by visual examination of *containment sumps* and *spill prevention equipment* as required in Section 7 of this practice; or~~

~~6.3.2 For jurisdictions that do not license or certify UST compliance inspectors, satisfies the minimum qualifications of the authority having jurisdiction as a UST installer and has satisfied the minimum training and examination requirements of 6.4; or~~

~~6.3.3 For jurisdictions that do not license or certify UST compliance inspectors or UST installers, has a minimum of two years UST installation experience and has satisfied the minimum training and examination requirements of 6.4.~~

~~6.4 Training and examination requirements—*Professional-inspector* training and examination must address UST *spill prevention equipment* and *containment sump* design and operational criteria outlined in 7.3 and conditions which may impair *spill prevention equipment* and *containment sump* operation outlined in 7.4.~~

## 7. Procedure

~~7.1 The *visual examination* prior to a *liquid test* required by *visual examination* 40 CFR is performed § 280.35 or as a loss prevention measure on an annual basis or periodic basis on *containments sumps*, or during 30 day *spill prevention equipment* and annual *containment sumps* walk through inspections.~~

NOTE 1—the term *containment sump* is generally used in this section for ease of reference. These procedures are intended to address *spill prevention equipment*, as applicable.

7.2 The *containment sump* must be accessible with components observable. Lighting must be adequate to observe a *compromised* component or indications resulting from a *compromised* component. The *professional-inspector* determines if ambient lighting is adequate or if portable lighting source is necessary. Use of portable lighting is dependent upon adequacy of ambient lighting, glare and reflectance on the observed components.

7.3 The *professional-inspector* performs a *liquid test* *visual examination* of the *containment sump* and observable system components to detect damage, deterioration or other indications of *compromise* that may impact the integrity of the system and



the system's capability to perform according to manufacturer specification to contain regulated substances leaked from the *primary fuel path* of the UST system until the regulated substance is detected and removed, specifically evaluating for the following:

7.3.1 proper installation;

7.3.2 structural integrity;

7.3.3 existence of liquid or debris;

7.3.4 existence of cracks, holes or other physical damage;

7.3.5 indications of compromised materials or components, including:

7.3.5.1 degradation; or

7.3.5.2 corrosion;

7.3.6 *containment sump* staining, discoloration or other markings demonstrating continuous; maximum fluid levels indicative of compromised containment;

7.3.7 functionality of all penetration boots, seals, fittings and test boots;

7.3.8 liquid sensor functionality and placement (if present);

7.3.9 functionality of piping and other conduits for indications of *compromise* including the following conditions:

7.3.9.1 delamination;

7.3.9.2 degradation; and

7.3.9.3 pipe swelling, elongation or growth.

7.3.10 functionality of spill prevention equipment drains if present;

7.3.11 separation of fill pipe from spill prevention equipment *containment sump*.

7.4 Visual indications of a *compromised containment sump* or *containment sump* component requiring repair or additional evaluation include:

7.4.1 *spill prevention equipment* lid is not *liquid tight* or is not sealed correctly;

7.4.2 *containment sump* contains debris or *liquid*;

7.4.3 *containment sump* has cracks, holes or other conditions indicating it is not *liquid tight*;

7.4.4 *containment sump* walls are structurally *compromised*;

7.4.5 *sump* walls have staining indicative of *compromised* containment;

7.4.6 *liquid* sensors, if required, are not positioned correctly;

7.4.7 penetration boots, seals or fittings are cracked, loose or *compromised*;

7.4.8 piping test boots are not positioned correctly;

7.4.9 piping material is *compromised*;

7.4.10 flex connectors are kinked, bent, twisted or otherwise not installed consistent with manufacturer requirements.