Study Guide

For

West Virginia Underground Storage Tank Tightness Tester

Certification (Class C)

This Document has been prepared in conjunction with the West Virginia Department of Environmental Protection by:
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Suggestions for Using This Study Guide

This study guide is intended to help you prepare for West Virginia's Underground Storage Tank Class C Tank tightness Tester Exam. The study guide consists of an extensive list of questions together with the documents in which the answers to the questions can be found. All of the questions from a specific document are grouped together in the study guide. After each question, the document section or page number where the answer can be found is given in parentheses. The process of reading the question, finding the answer, and writing the answer in your study guide will help you learn and remember the information you need to know to pass the certification examination.

The study guide has been divided into two sections: "primary" study documents and "secondary' study documents. The primary documents are used for an overview of particular topics, while secondary documents are used for specific equipment used on a particular storage system. It is recommended that you study the "primary" study documents first, followed by the secondary study documents. Please note that there may be cases where different documents may have conflicting information. In such cases, the document referenced by the question is considered the correct answer. Information on obtaining study guide materials is provided on pages iv and v of this document.

The actual certification exam will include only the material covered in these study questions, with the majority of the questions coming from the primary study documents. The only difference is that the exam will be in multiple choice format. The exam will be open book. During the examination, you may refer to this study guide and any other reference materials that you wish. You are cautioned, however, that you will not have sufficient time to look up the answers to all of the exam questions. You should be thoroughly familiar with the materials in this study guide before you take the examination.

The study guide is based on a number of industry publications and manufacturers' literature. The use of these documents does not constitute endorsement of specific tank or piping products by the West Virginia Department of Environmental Protection. These documents are used here as representative, authoritative sources of information regarding the proper tightness testing of underground storage systems.

Suggested Study Guide Documents for the West Virginia Underground Storage Tank Tightness Tester Certification Exam

(Class C Worker Certification)

Primary Study Documents

Petroleum Equipment Institute – PEI/RP1200-12

Federal Underground Storage Tank Regulations (40 CFR 280); Sections on *Leak Detection for Tanks and Piping, Spill and Overfill Prevention, Tanks and Piping*

West Virginia – Underground Storage Tank Rules

WVDEP – Miscellaneous Testing Report Form (Revised 7/19/10)

WVDEP – Documentation of Tightness Test Results, Policy (Revised 2/4/13)

OSHA Rules: *Lockout/Tagout (1910.147)*

OSHA Rules: Confined Space Entry (1910.146)

Secondary Study Documents

Petroleum Equipment Institute - PEI/RP100-11

National Fire Protection Association – *NFPA 30 & 30A – 2012*

Red Jacket, FX Tester, "Testing Mechanical Leak Detectors", Manual No. C051-272 Rev. C

FE Petro, Franklin Fueling Systems, "STP-MLD: Installation and Owner's Manual", 2006, 400439001, Rev. 6

Veeder-Root, "*Line Leak Detection Systems, UST Leak Detection Equipment, Mag Sump Sensor, and Other Sensors", Operability Testing Guide, Manual No. 577013-814, Rev. E)*

Study Guide Material Information

It is highly recommended that you obtain a copy of each of the study guides to review prior to taking the examination. Some of the study guides are free publications, and are being provided as a courtesy to you by the WVDEP. For study guides that must be purchased, we have included information on where they can be obtained. Please note that information on purchasing study guide materials may change at any time. For this reason the purchasing information provided may not be correct. **It is the sole responsibility of the applicant to obtain the necessary study guide materials to prepare for this exam.**

PEI/RP1200-12 "Recommended Practices for the Testing and Verification of Spill, Overfill, Leak Detection and Secondary Containment Equipment at UST Facilities", 2012 (Petroleum Equipment Institute)

-Must be purchased from Petroleum Equipment Institute, P.O. Box 2380, Tulsa, OK 74101 Phone 918/494-9895 http://www.pei.org, see "Publications & Resources" tab

Federal Underground Storage Tank Regulations: 40 CFR 280 "Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks (UST)"

-Free document, provided by the WVDEP

West Virginia Underground Storage Tank Rule, Title 33, Series 30

-Free document, provided by the WVDEP

WVDEP – Miscellaneous Testing Report Form (Revised 7/19/10)

-Free document, provided by the WVDEP

WVDEP – Documentation of Tightness Test Results, Policy (Revised 2/4/13)

-Free document, provided by the WVDEP

Occupational Safety and Health Administration (OSHA) "Safety and Health Regulations for Construction – "Lockout Tagout" 29 CFR Subpart J, 1910.147

-Free document, provided by WVDEP

Occupational Safety and Health Administration (OSHA) "Safety and Health Regulations for Construction – "Permit Required Confined Spaces" 29 CFR Subpart J, 1910.146

-Free document, provided by WVDEP

PEI/RP100-11 "Recommended Practices for Installation of Underground Liquid Storage Systems", 2011 (Petroleum Equipment Institute)

-Must be purchased from Petroleum Equipment Institute, P.O. Box 2380, Tulsa, OK 74101 Phone 918/494-9696 http://www.pei.org, see "Publications & Resources" tab

National Fire Prevention Association, NFPA 30 "Flammable and Combustible Liquids Code" (Chapter 21 "Storage of Liquids in Tanks- Requirements for all Storage Tanks", Chapter 27 "Piping Systems") and NFPA 30A "Code for Motor Fuel Dispensing Facilities and Repair Garages" (Chapter 5 "Piping for Liquids") (2012 Edition)

-Must be obtained from the National Fire Protection Association, available at: http://www.nfpa.org/, see "Codes & Standards" tab, or phone 800-344-3555 for customer sales

Red Jacket, FX Tester, “Testing Mechanical Leak Detectors”, Manual No. C051-272 Rev. C
-Free document, provided by the WVDEP

FE Petro, Franklin Fueling Systems, “STP-MLD: Installation and Owner’s Manual”, 2006, 400439001, Rev. 6
-Free document, provided by the WVDEP

Veeder-Root, “*Line Leak Detection Systems, UST Leak Detection Equipment, Mag Sump Sensor, and Other Sensors”, Operability Testing Guide, Manual No. 577013-814, Rev. E)*
-Free document, provided by the WVDEP

PEI/RP1200-12 "Recommended Practices for the Testing and Verification of Spill, Overfill, Leak Detection and Secondary Containment Equipment at UST Facilities" (Petroleum Equipment Institute, 2012)

(Study Guide Questions for West Virginia Underground Storage Tank System Tightness Tester Certification Exam)

1. According to PEI/RP1200-12, what safety precautions should be observed when working in any area where fuel vapors may be present?
   (PEI/RP1200-12, Section 3.4)

2. PEI/RP1200-12 identifies two methods for testing the integrity of tank secondary containment systems. What are they?
   (PEI/RP1200-12, Section 4.1)

3. According to PEI/RP1200-12, why does a secondary containment integrity test not necessarily determine whether the primary tank is tight?
   (PEI/RP1200-12, Section 4.1)

4. According to PEI/RP1200-12, what test method is used when a partial vacuum is used to test the integrity of a tank?
   (PEI/RP1200-12, Section 4.1)

5. According to PEI/RP1200-12, what type of vacuum pump should **not** be used when testing the integrity of an underground storage tank?
(PEI/RP1200-12, Section 4.1)

6. According to PEI/RP1200-12, when performing a vacuum integrity test, the vacuum-generating device should be capable of pulling how much vacuum?
(PEI/RP1200-12, Section 4.2.7)

7. According to PEI/RP1200-12, when performing a secondary containment integrity test using a vacuum test, how much vacuum should be pulled on a fiberglass tank?
(PEI/RP1200-12, Section 4.2.8)

8. According to PEI/RP1200-12, when performing a secondary containment integrity test using a vacuum test, how much vacuum should be pulled on a steel tank?
(PEI/RP1200-12, Section 4.2.8)

9. According to PEI/RP1200-12, when performing a secondary containment integrity test using a vacuum test, what determines an integrity test fail result?
(PEI/RP1200-12, Section 4.2.8)

10. According to PEI/RP1200-12, what period of time should a secondary containment integrity vacuum test remain on a 12,000 gallon steel tank?
(PEI/RP1200-12, Section 4.2.8, see Table 4-1)

11. According to PEI/RP1200-12, what is the criteria for testing the integrity of piping secondary containment that indicates a "passed" integrity test?
(PEI/RP1200-12, Section 5.8)

12. According to PEI/RP1200-12, when testing the integrity of a spill bucket, what fluid should be used to conduct the test?
(PEI/RP1200-12, Section 6.2, figure 6-1)

13. According to PEI/RP1200-12, when testing the integrity of a spill bucket using the hydrostatic test method, what length of time is required between the initial water level measurement and the ending water level measurement?
(PEI/RP1200-12, Section 6.2.5)

14. According to PEI/RP1200-12, when testing the integrity of a spill bucket using the hydrostatic test method, what determines if the spill bucket passes the integrity test?
(PEI/RP1200-12, Section 6.2.6)

15. According to PEI/RP1200-12, when using the vacuum test method to test the integrity of a spill bucket, how much vacuum is to be applied?
(PEI/RP1200-12, Section 6.3.5)

16. According to PEI/RP1200-12, when using the vacuum test method to test the integrity of a spill bucket, what is the criteria that indicates a "passed" integrity test?
(PEI/RP1200-12, Section 6.3.6)

17. According to PEI/RP1200-12, when testing the integrity of a containment sump, the test fluid must be at what level in relation to the highest sump penetration or sidewall seam?
(PEI/RP1200-12, Section 6.5.6)

18. According to PEI/RP1200-12, when testing the integrity of a containment sump, what length of time is required between the initial water level measurement and the ending water level measurement?
(PEI/RP1200-12, Section 6.5.6)

19. According to PEI/RP1200-12, when testing the integrity of a containment sump, what is the criteria that indicates a "passed" integrity test?
(PEI/RP1200-12, Section 6.5.7)

20. According to PEI/RP1200-12, what is the "pass" criteria when inspecting automatic shutoff devices used for overfill prevention?
(PEI/RP1200-12, Section 7.1.7)

21. According to PEI/RP1200-12, what is the "pass" criteria when inspecting a ball float valve used for overfill prevention?
(PEI/RP1200-12, Section 7.2.7)

22. According to PEI/RP1200-12, what is the "pass" criteria when inspecting an overfill alarm device used for overfill prevention?
(PEI/RP1200-12, Section 7.2.7)

23. According to PEI/RP1200-12, when testing the ATG system (electronic UST monitoring system), what criteria determines if the ATG passes testing?
(PEI/RP1200-12, Section 8.2.1.7)

24. According to PEI/RP1200-12, sensor functionality test are used to confirm the operation of the liquid detection sensors that are located in the interstitial spaces of UST systems. Identify the difference between "discriminating" and "non-discriminating" sensors"?
(PEI/RP1200-12, Section 8.3.1)

25. According to PEI/RP1200-12, what is the "pass" criteria when testing an interstitial sensor?
(PEI/RP1200-12, Section 8.3.7)

26. According to PEI/RP1200-12, the purpose of testing a mechanical line leak detector is to determine if the detector can detect a product line leak equivalent to what rate and pressure?
(PEI/RP1200-12, Section 9.1.2)

27. According to PEI/RP1200-12, when testing a mechanical line leak detector, the test should be conducted at which dispenser within the product delivery system?
(PEI/RP1200-12, Section 9.1.5)

28. According to PEI/RP1200-12, when testing a mechanical line leak detector, with the STP on and full pump pressure indicated, the test apparatus leak orifice should be opened and adjusted to achieve what leak rate?
(PEI/RP1200-12, Section 9.1.6)

29. According to PEI/RP1200-12, when testing an electronic line leak detector (ELLD), the test method must determine if the ELLD can detect a product line leak equivalent to 3 gph at 10 psig. With a full line pressure of 15 psig, what is the flow rate of the test apparatus leak orifice to achieve the required leak equivalent?
(PEI/RP1200-12, Section 9.2.6, see Table 9-1)

30. According to PEI/RP1200-12, when testing a shear valve, what are the criteria that must be met in order for the shear valve to pass testing?
(PEI/RP1200-12, Section 10.3.6)

31. According to PEI/RP1200-12, when testing an emergency stop switch (emergency shutoff switch), what must the switch disconnect power to in order to pass testing?
(PEI/RP1200-12, Section 11.7)

Code of Federal Regulations 40 CFR Part 280 "Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks (UST)

(Study Guide Questions for West Virginia Underground Storage Tank System Tightness Tester Certification Program)

1. Define "regulated substance", according to 40 CFR 280.
   (40 CFR Subpart A, 280.12)

2. In 40 CFR 280, the definition of "repair" means to _?_ a tank or UST system component that has caused a release of product from the UST system.
   (40 CFR Subpart A, 280.12)

3. In 40 CFR 280, does the definition of "underground storage tank or UST" include underground piping connected to the UST?
   (40 CFR Subpart A, 280.12)

4. 40 CFR 280 states that overfill prevention equipment that automatically shuts off flow into the UST must shut the flow off when the tank is no more than _?_ full.
   (40 CFR Subpart B, 280.20)

5. 40 CFR 280 states that overfill prevention equipment that alerts the transfer operator by restricting the flow into the UST must restrict the flow when the tank is no more than _?_ full.
(40 CFR Subpart B, 280.20)

6. When a tank and / or piping component has been repaired, 40 CFR 280 states what must occur within 30 days of the repair completion date, unless an approved inspection, monitoring or testing method is used?
(40 CFR Subpart C, 280.33)

7. In addition to an automatic line leak detector, pressurized piping must have one additional form of leak detection. According to 40 CFR 280, what are allowable options?
(40 CFR Subpart C, 280.41)

8. According to 40 CFR 280, when line tightness testing is used for pressurized piping leak detection, how often must a test be conducted?
(40 CFR Subpart C, 280.41)

9. According to 40 CFR 280, when line tightness testing is used for suction piping leak detection, how often must a test be conducted?
(40 CFR Subpart C, 280.41)

10. Automatic line leak detectors, per 40 CFR 280 regulations, must be able to detect leaks of _?_ gallons per hour at 10 psi line pressure within 1 hour.
(40 CFR Subpart D, 280.44)

11. Per 40 CFR 280 regulations, how often must an automatic line leak detector be tested to be sure it is operating properly?
(40 CFR Subpart C, 280.44)

12. According to 40 CFR 280 regulations, how long must written documentation of all calibration, maintenance, and repair of release detection equipment permanently located on-site be maintained after service work is complete?
(40 CFR Subpart D, 280.45)

13. According to 40 CFR 280 regulations, results of tank tightness testing conducting must be retained for how long?
(40 CFR Subpart D, 280.45)

14. According to 40 CFR 280, if an UST owner or operator suspects a release has occurred from an UST system, how soon must the WVDEP be notified?
(40 CFR Subpart E, 280.50)

15. According to 40 CFR 280 regulations, what conditions are considered to be evidence of a suspected release requiring WVDEP notification?
(40 CFR Subpart D, 280.50)

16. According to 40 CFR 280 regulations, what size spill or overfill of petroleum must be reported to the WVDEP?
(40 CFR Subpart D, 280.53)

17. According to 40 CFR 280 regulations, what must be done in the event a spill or overfill of less than 25 gallons of petroleum occurs that cannot be cleaned up within 24 hours?
(40 CFR Subpart D, 280.53)

West Virginia Underground Storage Tank Rule "Title 33 Series 30"

(Study Guide Questions for West Virginia Underground Storage Tank System Tightness Tester Exam)

1. To whom do the requirements of WV Title 33 Series 30 rules apply?

   (Section 33-30.3)

2. During what part of the tank or piping testing process is a certified person required to be present?

   (Section 33-30.3.2.a.3)

3. In order for an individual to perform tank and/or piping tightness testing, that person must have which certification?

   (Section 33-30.3.3.a)

4. Can a tank worker Class A, B, C, E, or D certification can be awarded to a business or corporation?

   (Section 33-30.3.4.a)

5. Does an individual certified to do underground storage tank work in WV have to be a resident of the State?

   (Section 33-30.3.4.b)

6. In order for an applicant to be considered for an Underground Storage Tank worker Class C certification, he or she must be able to demonstrate work experience by active participation in how many tank tightness tests?

   (Section 33-30.3.4.d)

7. Applicants for Class C certification must submit proof of what additional certifications with their application?

   (Section 33-30.3.4.d.2)

8. What signed written statement must be filed with the Director of the West Virginia DEP by applicants for Class C certification?

   (Section 33-30.3.4.d.2)

9. All underground storage tank worker certificates and certificate renewals expire December 31st of every second year. When must applications for certificate renewal and associated payment be submitted in order to renew the certification?

(Section 33-30.3.5)

10. In order for an individual to renew his or her Underground Storage Tank worker certification, how many hours of director approved continuing education training courses must be completed?

(Section 33.30.3.5.a.2)

11. What will a person who has obtained Class C worker certification be given to demonstrate that they are certified?

(Section 33-30.3.6)

12. What are the ways an Underground Storage Tank worker class certification application be denied or revoked?

(Section 33-30.3.7)

13. Is a person who violates the provisions of the worker certification requirements subject to enforcement action?

(Section 33-30.3.8)

West Virginia Division of Environmental Protection "Miscellaneous Testing Report Form"

(Study Guide Questions for West Virginia Underground Storage Tank System Tightness Tester Exam)

1. The applicable portions of the WVDEP's Miscellaneous Testing Report Form must be completed and provided to the facility owner/operator within __?__ days of the test date. (See Introduction)

2. According to the Miscellaneous Testing Report Form, how much pressure/vacuum loss occurring during the test results in a failed test? (See Introduction)

3. What facility information is required to be included in the Miscellaneous Testing Report Form? (Section A)

4. When completing the Miscellaneous Testing Report Form, under "Testing Contractor Information", the certified tester must sign and date the form (printed name and signature), provide company name, and provide __? (Section B)

5. When testing spill buckets, what information is required on the Miscellaneous Testing Report Form? (Section C)

6. When performing ball float verifications, what must occur in the event product is delivered without a tight fill or with pressure drops and a ball float has been verified (on systems without fill shut-off or alarms)? (Section D)

7. How often are routine testing of sumps and under-dispenser containment required? (Section E)

8. When testing sumps and under-dispenser containment, the Miscellaneous Testing Report Form indicates, if not using one of the test methods listed on the form, containment sumps being hydrostatically tested must be filled at least 6 inches above the highest penetration, fitting or joint and allowed to stand at least _?_ minutes before beginning the test. (Section E)

9. When testing sumps and under-dispenser containment, what information is required to be documented on the Miscellaneous Testing Report Form? (Section E)

10. When testing sumps and under-dispenser containment, the Miscellaneous Testing Report Form requires the tester to verify that water sensors were properly functioning at what time during the testing procedure? (Section E)

11. How often are routine testing of interstitial spaces required? (Section F)

12. When testing interstitial spaces, the Miscellaneous Testing Report Form requires what information to be documented? (Section F)

13. In the event that a repair is made to under-dispenser containment before testing, what must the tester include as documentation on the Miscellaneous Testing Report Form? (Section G)

West Virginia Division of Environmental Protection "Documentation of Tightness Test Results" Policy

(Study Guide Questions for West Virginia Underground Storage Tank System Tightness Tester Exam)

1. The purpose of the WVDEP's Documentation of Tightness Test Results policy is to ensure that tightness tests of all types are properly conducted according to __? (Section I)

2. The purpose of the WVDEP's Documentation of Tightness Test Results policy is to ensure that certified testing personnel are able to __? (Section I)

3. For each brand of tank tightness testing equipment that a tester wishes to utilize in West Virginia, what must be submitted to the WVDEP Director by the test equipment manufacturer? (Section II.A)

4. List all required information as part of a tank tightness test? (Section II.B)

5. When providing documentation for each tank tightness test performed, a site sketch must be included. What information must be included on this site sketch? (Section II.B)

6. When providing documentation for each tank tightness test performed, what information must be included in volumetric tests? (Section II.B)

7. When conducting a tank tightness test, documentation must include a signed statement by the tester that certifies what? (Section II.B)

8. For each tank test performed, what information must be documented? (Section II.B.1)

9. For each tank test performed, what information must be documented concerning the water table? (Section II.B.1)

10. For each piping test performed, what information is required to be documented? (Section II.B.2)

11. When conducting a line leak detector test, the size of the __?__ used to determine the performance of the line leak detector must be documented. (Section II.C)

Occupational Safety and Health Standards, Subpart J – General Environmental Controls, "The Control of Hazardous Energy (Lockout/Tagout)" (Standard Number 1910.147)

(Study Guide Questions for West Virginia Underground Storage Tank System Tightness Tester Certification Exam)

1. OSHA 1910.147 standards applies to the control of energy during __?.
   (OSHA 1910.147 (a)(2)(i))

2. What operations are not covered by OSHA 1910.147?
   (OSHA 1910.147 (a)(2)(ii)(A))

3. Define "affected employee" according to OSHA 1910.147.
   (OSHA 1910.147 (b))

4. Define "lockout" and "lockout device" according to OSHA 1910.147.
   (OSHA 1910.147 (b))

5. Define "tagout" and "tagout device" according to OSHA 1910.147.
(OSHA 1910.147 (b))

6. According to OSHA 1910.147, in the event an energy isolating device can't be locked out, what's required? (OSHA 1910.147 (c)(2)(i))

7. According to OSHA 1910.147, any newly installed machines and equipment must be designed to accept a __?__ device. (OSHA 1910.147 (c)(2)(iii))

8. According to OSHA 1910.147, when can identified lockout/tagout devices be used for other purposes? (OSHA 1910.147 (c)(5)(ii))

9. According to OSHA 1910.147, lockout and tagout devices in a facility must be standardized by what allowable methods?
(OSHA 1910.147 (c)(5)(ii)(B))

10. According to OSHA 1910.147, tagout devices must have a minimum unlocking strength of ___? (OSHA 1910.147 (c)(5)(ii)(C)(2))

11. According to OSHA 1910.147, tagout devices must warn against hazardous conditions if the machine or equipment is energized. What are allowable statements that can be used on the legend of the tagout device? (OSHA 1910.147 (c)(5)(iii))

12. According to OSHA 1910.147, an "Energy Control Procedure" must be inspected how often to ensure procedures and requirements of the standard are being followed? (OSHA 1910.147 (c)(6)(i))

13. According to OSHA 1910.147, who can perform the required periodic inspection of an "Energy Control Procedure"? (OSHA 1910.147 (c)(6)(i)(B))

14. According to OSHA 1910.147, who must be instructed in the purpose and use of the "Energy Control Procedure"? (OSHA 1910.147 (c)(7)(i)(B))

15. According to OSHA 1910.147, when can a tagout device attached to an energy isolation device be bypassed or ignored? (OSHA 1910.147 (c)(7)(ii)(B))

16. According to OSHA 1910.147, when is employee retraining required as part of the "Energy Control Procedure"? (OSHA 1910.147 (c)(7)(iii)(A))

17. According to OSHA 1910.147, who can perform lockout or tagout on equipment or machines? (OSHA 1910.147 (c)(8))

18. According to OSHA 1910.147, when tagout devices are used with energy isolating devices designed with the capability of being locked, where must the tag attachment be fastened? (OSHA 1910.147 (d)(4)(iii)(A))

19. According to OSHA 1910.147, when are "affected employees" to be notified that lockout or tagout devices have been removed? (OSHA 1910.147 (e)(2)(ii))

20. Per OSHA 1910.147 guidelines, who, unless unavailable, removes lockout or tagout devices? (OSHA 1910.147 (e)(3))

21. According to OSHA 1910.147, are outside servicing personnel (like contractors) required to follow lockout and tagout procedures? (OSHA 1910.147 (f)(2)(i))

Occupational Safety and Health Standards, Subpart J – General Environmental Controls, "Permit Required Confined Spaces" (Standard Number 1910.146)

(Study Guide Questions for West Virginia Underground Storage Tank System Tightness Tester Certification Exam)

1. Define "confined space" per OSHA 1910.146 guidelines.
   (OSHA 1910.146 (b))

2. Identify the potential causes for a "hazardous atmosphere", according to OSHA 1910.146.
   (OSHA 1910.146 (b))

3. According to OSHA 1910.146, what are the responsibilities of an "entry supervisor"?
   (OSHA 1910.146 (b))

4. Identify the potential characteristics of a "permit-required confined space".
   (OSHA 1910.146 (b))

5. Per OSHA 1910.146 guidelines, when is a written permit space program required?
(OSHA 1910.146 (c)(4))

6. Per OSHA 1910.146 guidelines, what must the internal atmosphere of a confined space be tested for before entry is allowed?
(OSHA 1910.146 (c)(5)(ii)(C))

7. Per OSHA 1910.146 guidelines, when using forced air ventilation in a confined space, how long must air ventilation continue?
(OSHA 1910.146 (c)(5)(ii)(E)(2))

8. According to OSHA 1910.146 guidelines, in the event a hazardous atmosphere is detected in a confined space while occupied by an employee, what must the employee in the confined space immediately do?
(OSHA 1910.146 (c)(5)(ii)(G)(1))

9. Per OSHA 1910.146 guidelines, list the equipment that the employer is required to make available to employees for entering a confined space.
(OSHA 1910.146 (d)(4)(i) through (ix))

10. Under OSHA 1910.146 guidelines, when is an "attendant" required?
(OSHA 1910.146 (d)(6))

11. According to OSHA 1910.146, when can entry permits be cancelled?
(OSHA 1910.146 (e)(5)(i) and (e)(5)(ii))

12. OSHA 1910.146 states that cancelled entry permits must be retained by the employer for how long? (OSHA 1910.146 (e)(6))

13. According to OSHA 1910.146, what information is required to be identified on an entry permit? (OSHA 1910.146 (f)(1) through (f)(14))

14. According to OSHA 1910.146, when are employers required to provide training to employees on confined space entry?
(OSHA 1910.146 (g)(2)(i) through (g)(2)(iv))

15. According to OSHA 1910.146, what are the duties of the "attendant"?
(OSHA 1910.146 (i)(1) through (i)(10))

16. According to OSHA 1910.146, what are the duties of the "entry supervisor"?
(OSHA 1910.146 (j(1) through (j)(6))

17. According to OSHA 1910.146, when working in confined spaces, when are mechanical devices designed to retrieve personnel required?
(OSHA 1910.146 (k)(3)(ii))

18. According to OSHA 1910.146, at least one person on the identified rescue team must hold a current certification in what two health-related areas?
(OSHA 1910.146 (k)(2)(iii))

PEI/RP100-11 "Recommended Practices for Installation of Underground Liquid Storage Systems" (Petroleum Equipment Institute, 2011)

(Study Guide Questions for West Virginia Underground Storage Tank System Tightness Tester Certification Exam)

1. PEI/RP100-11 warns that vent-restriction devices, also called ball float valves, must not be used under what conditions?
   (PEI/RP100-11, Section 7.3.3)

2. According to PEI/RP100-11, where should a liquid sensor in a dispenser sump used for leak detection be located?
   (PEI/RP100-11, Section 8.7)

3. According to PEI/RP100-11, what method of leak detection is required on "safe suction systems"?
   (PEI/RP100-11, Section 9.3)

National Fire Protection Association – NFPA 30 -Flammable and Combustible Liquids Code and NFPA 30A – Code for Motor Fuel Dispensing Facilities and Repair Garages (NFPA 30, Chapter 21 - Storage of Liquids in Tanks – Requirements for All Storage Tanks, NFPA 30, Chapter 27 – Piping Systems, NFPA 30A – Chapter 5 – Piping for Liquids – 2012 Edition

(Study Guide Questions for West Virginia Underground Storage Tank System Tightness Tester Certification Exam)

1. According to NFPA 30/30A, what test methods for tanks and piping that contain, or could have contained, flammable or combustible liquids should **not** be used? (NFPA 30, 21.5.2.2, 27.7.3.1, NFPA 30A, 5.4.3)

2. NFPA 30A states that all piping, including secondary containment piping, on a UST system must be tightness tested when? (NFPA 30A, 5.4.1)

3. According to NFPA 30A, how often should line leak detectors be tested? (NFPA 30A, 5.5)

4. NFPA 30 states that underground secondary containment tanks shall have the primary (inner) tank tested for tightness either hydrostatically or with air pressure under what minimum and maximum pressures? (NFPA 30, 21.5.2.7)

5. According to NFPA 30, when conducting a tightness test on a underground secondary containment tank using pressure or vacuum test methods, how long should the pressure or vacuum be held, unless specified otherwise by listing procedures for the tank? (NFPA 30, 21.5.2.7.2)

6. According to NFPA 30A, secondary containment-type piping shall have the interstitial space (annulus) tested hydrostatically or with air pressure at minimum gauge pressure of __?__, or tested in accordance with the listing or the manufacturer's instructions. (NFPA 30A, 5.4.2)

Red Jacket – FX Tester "Testing Mechanical Leak Detectors" (Manual No. C051-272, Rev. C)

(Study Guide Questions for West Virginia Underground Storage Tank System Tightness Tester Certification Exam)

1. The Red Jacket FX Tester Manual includes U.S. EPA information on how often line leak detectors (LLDs) are to be tested, which is __?
   (Red Jacket FX Tester, Introduction, page 1)

2. The Red Jacket FX Tester Manual states "It has been established that the obligation of compliance with the appropriate regulations covering USTs is the __?
   (Red Jacket FX Tester, Introduction, page 2)

3. When using the Red Jacket FX Tester with an FX2 Series line leak detector, which hose color is connected to the tank test port?
   (Red Jacket FX Tester, Testing Procedures, page 4, Fig. 2)

4. When using the Red Jacket FX Tester with an FX2 Series line leak detector, which hose color is connected to the Snap Tap Connector on the FX2 Series line leak detector?
   (Red Jacket FX Tester, Testing Procedures, page 4, Fig. 2)

5. When using the Red Jacket FX Tester with an FX2 Series line leak detector, the tester is required to select a leak rate for testing. If the tester chooses a leak rate of 3 gallons per hour (WVDEP maximum allowable leak rate) and a pump operating pressure of 20 psi, what is the equivalent leak rate at 10 psi?
(Red Jacket FX Tester, Testing Procedures, Page 5, Table 1)

6. When using the Red Jacket FX Tester with an FX2 Series line leak detector, during the testing procedure, the FX Tester selector valve has been turned to the "leak test" position, and the pressure gauge has been observed, with a reading of 25 psi. What does this reading indicate?
(Red Jacket FX Tester, Testing Procedures, page 5)

7. In addition to testing line leak detectors, The Red Jacket FX Tester can be used to check pump pressure. A ¾ HP Red Jacket pump, operating at 60Hz, has what pressure when pumping gasoline?
(Red Jacket FX Tester, Pump Operation, page 7, Table 2)

8. The Red Jacket FX Tester manual cautions that, during certain seasons, thermal contraction can occur on a Red Jacket line leak detector. When is this most likely to occur?
(Red Jacket FX Tester, Thermal Contraction, page 7)

9. A vacuum test is being performed during cold weather using a Red Jacket FX Tester. The submersible pump was turned on, and a line pressure of 25 psi was observed. The submersible was then turned off, and the line pressure dropped to zero. After 10 minutes, the gauge reading fell below zero and into the vacuum range. What does this indicate?
(Red Jacket FX Tester, Vacuum Test, page 8)

10. According to the Red Jacket FX Tester manual, some submersible pumps are not equipped with tank vents. In this case, from what location in the system should the line leak detector be tested using the FX Tester?
(Red Jacket FX Tester, Using the FX Tester for Testing at the Impact Valve, page 9)

11. When using the Red Jacket FX Tester at the impact valve, the Red Jacket FX Tester states that the simulated leak must be created at what location?
(Red Jacket FX Tester, Installation of the FX Tester at the Impact Valve, page 10)

12. For a manifolded pump system that have two Red Jacket line leak detectors on a single line and the pumps operate simultaneously, using the Red Jacket FX Tester where must testing be performed?
(Red Jacket FX Tester, manifold Pumps with Leak Detectors, page 11, also see Fig. 3 on page 9)

FE Petro, Franklin Fueling Systems – "STP-MLD: Installation and Owner's Manual" (Franklin Fueling Systems, 2006, 400439001 Rev. 6)

(Study Guide Questions for West Virginia Underground Storage Tank System Tightness Tester Certification Exam)

1. The FE Petro STP-MLD Manual includes several warnings and cautions for installing and testing mechanical line leak detectors. One warning includes checking for the presence of __?__ before entering a containment sump, and periodically while working in a containment sump.
   (FE Petro STP-MLD, Important Safety Messages, page 2)

2. According to the FE Petro STP-MLD Manual, STP-MLD piston-operated mechanical leak detectors are intended for installation in what type of pumping system?
   (FE Petro STP-MLD, Introduction, page 3)

3. According to the FE Petro STP-MLD Manual, STP-MLD piston-operated mechanical leak detectors are intended for installation only in a petroleum pumping system operating within what pressure range (with less than 12 feet of static fluid head)?
   (FE Petro STP-MLD, Introduction, page 3)

4. According to the FE Petro STP-MLD Manual, STP-MLD piston-operated mechanical leak detectors are intended for installation only in petroleum pumping systems. What are FE Petro STP-MLD-D units to be used for?
(FE Petro STP-MLD, Introduction, page 3)

5. When does the FE Petro STP-MLD Manual recommend testing all mechanical line leak detectors?
(FE Petro STP-MLD, Introduction, page 3)

6. According to the FE Petro STP-MLD manual, what test must be conducted before installing a leak detector for the first time?
(FE Petro STP-MLD, Installation Instructions, page 3)

7. According to the FE Petro STP-MLD Manual, the system must be purged of what substance before the leak detector is installed?
(FE Petro STP-MLD, Installation Instructions, page 3)

8. What type of thread sealant is recommended for the installation of a FE Petro mechanical line leak detector?
(FE Petro STP-MLD, Installation Instructions, Required Tools, page 4)

9. What electrical safety steps should be taken before installing a FE Petro mechanical line leak detector?
(FE Petro STP-MLD, Installation Instructions, Preparation, page 4)

10. According to the FE Petro STP-MLD Manual, what is the purpose of the copper tubing connecting the leak detector to the tank port on the submerged pump?
(FE Petro STP-MLD, Installation Instructions, Preparation, page 4)

11. According to the FE Petro STP-MLD Manual, when performing STP-MLD line leak testing, all air must be purged from the pumping system. At which dispenser should the air purging process start?
(FE Petro STP-MLD, Introduction, Preparation, page 5)

12. When performing line leak testing on a FE Petro STP-MLD mechanical leak detector, what is the leak rate to be used during the test (at 10 psi)?
(FE Petro STP-MLD, Line Leak Testing, page 5)

13. According to the FE Petro STP-MLD Manual, when performing STP-MLD line leak testing, the “test fixture” is installed into the dispenser shear-valve port. What does the “test fixture” consist of?
(FE Petro STP-MLD, Line Leak Testing, page 5)

14. According to the FE Petro STP-MLD Manual, when performing STP-MLD line leak testing, the leak rate, in gallons per hour (GPH), is calculated using what formula
(FE Petro STP-MLD, STP-MLD Line Leak Detection, page 5)

15. According to the FE Petro STP-MLD Manual, after completing STP-MLD line leak indicator testing, what should be done with the warranty registration form after it has been completed?
(FE Petro STP-MLD, Line Leak Indicator Testing, page 6)

Veeder-Root – "Line Leak Detection Systems, UST Leak Detection Equipment, Mag Sump Sensor, and Other Sensors", Operability Testing Guide
(Veeder-Root Manual No. 577013-814, Rev. E)

(Study Guide Questions for West Virginia Underground Storage Tank System Tightness Tester Certification Exam)

1. According to the Veeder-Root Line Leak Detection Systems Guide, what steps should be taken before a leak detection test begins?
   (Veeder-Root, Before You Begin, page 4)

2. According to the Veeder-Root Line Leak Detection Systems Guide, when utilizing the Red Jacket FX tester, what should be done with the circuit breakers that provide power to the STP?
   (Veeder-Root, 3 GPH testing utilizing the Red Jacket FX tester, page 6)

3. According to the Veeder-Root Line Leak Detection Systems Guide, when utilizing the Red Jacket FX tester, what is the required flow rate with a pump operating pressure of 30 psi to simulate the testing leak rate of 3.5 gph at 10 psig?
   (Veeder-Root, 3 GPH testing utilizing the Red Jacket FX tester, Page 6, Table 1)

4. According to the Veeder-Root Line Leak Detection Systems Guide, when utilizing the Red Jacket FX tester and performing the 3 gph test , the STP will turn "on" and "off" intermittently. Veeder-Root warns to not assume the test has completed until the TLS console has performed what function?
(Veeder-Root, 3 GPH testing utilizing the Red Jacket FX tester, page 7)

5. According to the Veeder-Root Line Leak Detection Systems Guide, when verifying operability of a Mag Sump senser, when the Mag sensor is removed from the containment area, what should be indicated on the TLS console?
(Veeder-Root, Verifying Operability of Mag Sump Sensor, page 11)

6. According to the Veeder-Root Line Leak Detection Systems Guide, when verifying operability of a Mag Sump senser, how long should the tester wait until the console goes into alarm mode?
(Veeder-Root, Verifying Operability of Mag Sump Sensor, page 12)

7. Using the Veeder-Root Line Leak Detection Systems Guide, identify which test procedure is to be utilized with Veeder-Root Part No. 794390-40x series (Interstitial Sensor for Fiberglass Tanks).
(Veeder-Root, Verifying Operability of Other Sensors, page 13, Table 2)

8. According to the Veeder-Root Line Leak Detection Systems Guide, under the section on Verifying Operability of Other Sensors, using Veeder-Root Part No. 794380-320 (Solid State Discriminating Pan Sensor), Testing Procedure A is used. What's the water level required in the test container to test the Low Liquid alarm?
(Veeder-Root, Verifying Operability of Other Sensors, page 14, Table 3)

9. According to the Veeder-Root Line Leak Detection Systems Guide, under the section on Verifying Operability of Other Sensors, using Veeder-Root Part No. 794380-341 (Discriminating Interstitial Sensor), Testing Procedure D is used. What's the fuel level required in the test container to test the sensor?
(Veeder-Root, Verifying Operability of Other Sensors, page 14, Table 3)